

Mt. Ararat High School

Program of Studies

2021 – 2022

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mta.link75.org*

The Mt. Ararat High School *Program of Studies* presents information about courses which may be taken towards a Mt. Ararat High School diploma. This publication is designed to inform students and parents as they plan with their future goals in mind.

Please note that some courses or other provisions described in this publication may turn out to be unavailable in 2021-2022, depending on course enrollment, staffing, or other factors. For example, it is unlikely that courses with enrollments of fewer than 10 students will run.

Information on educational programming for students in grades 9-12 with documented disabilities, as determined through Individualized Educational Plan (IEP) meetings, is available from the Special Services Department at Mt. Ararat High School.

For additional information, contact the high school principal at Mt. Ararat High School, 68 Eagles Way, Topsham, ME 04086. Telephone: (207) 729-2951. Fax: (207) 729-2953. Web site: <http://mta.link75.org>

MT. ARARAT HIGH SCHOOL VISION



Empowering **A**ll to **G**row, **L**earn, **E**xplore & **S**oar

MTA's Code of Cooperation

Engage in Learning
Demonstrate Effort and Perseverance
Take Responsibility for Your Own Learning
Be Respectful of Self and Others
Be Safe

At Mt. Ararat High School, our vision is for every student to explore and work toward fulfilling his or her unique potential.

In order to achieve this vision, it is our mission to

- ensure challenging and personalized learning;
- teach the essential skills necessary to meet the demands of a changing world;
- provide a safe, nurturing, and intellectually vibrant environment where diversity is valued and everyone is respected; and
- work in partnership with families and the community to promote the health and development of the whole individual.

Academic Expectations for Student Learning

All Mt. Ararat High School graduates will be self-directed and lifelong learners. As such, they will be

- effective communicators,
- quality workers,
- problem solvers, and
- integrative and informed thinkers.

Civic and Social Expectations for Student Learning

All Mt. Ararat High School graduates will be responsible and involved citizens. As such, they will

- assume responsibility for their own behavior and utilize appropriate conflict resolution skills,
- demonstrate an understanding of the rights, duties, and responsibilities of citizenship in a democratic society, and
- be respectful and tolerant.

These academic, civic, and social expectations adhere to 21st Century learning expectations and the Maine Guiding Principles.

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ACADEMIC REQUIREMENTS AND GRADUATION

Please refer to MSAD No. 75 policy for more information on graduation requirements.

Mt. Ararat High School students must earn a minimum of 21.25 credits to be awarded a diploma. Of the 21.25 credit total required, students must earn a minimum of:

4 English credits (English I-IV; eligible students may substitute AP English for levels III and/or IV)

- 3 Social Studies credits (Refer to Social Studies section for details on requirements)
- 3 Math credits (Refer to Mathematics section for details on requirements)
- 3 Science credits to include Physical Science, Biology, Chemistry, and Physics (Refer to Science section for details on requirements)
- 1 Fine Arts credit (Music and Visual Arts courses and any fine arts English elective courses)
- 1 Physical Education credit (PE I plus either PE II or Outdoor Education)
- 0.50 Health credit
- 1.25 credits through participation in and completion of the Advisory Program and Capstone Project

Students enroll in elective courses for credit to achieve the 21.25 credit requirement for graduation.

Students earn credits when courses are passed; partial credits are not awarded. A full credit is awarded for year-long courses. A half credit is awarded for semester-long courses. A quarter credit is awarded for each year of the Advisory Program with the exception of grade 12 which is a half credit program.

Students who attend Region 10 Technical High School prior to 11th grade are subject to modified graduation requirements.

Additional information regarding credits, requirements, and course options is available through the school counseling office.

BEYOND REQUIREMENTS

In addition to satisfying graduation credit requirements:

- Students are encouraged to take classes that challenge their academic abilities.
- Students should keep options open as they plan for careers and/or post-secondary education, two or four year colleges.
- Students should plan to exceed the high school graduation requirements. At least three years of a world language, four years of formal mathematics and science study are strongly advised for any student who plans to enroll in a four year college or technical/scientific based community college or military program.
- Students who seek to compete as Division I or II athletes must satisfy the NCAA Clearinghouse academic eligibility guidelines, and need to be aware of NCAA eligibility requirements. Contact the counseling office for more information or go to <http://www.ncaa.com>.

For operational purposes, all students move to the next grade level at the conclusion of each year, progressing through Mt. Ararat High School's program as first-year, second-year, third-year, and fourth-year students. Typically, students graduate in four years. All third-year students, regardless of the number of credits earned, are required by the State of Maine to take the tests associated with the Maine Comprehensive Assessment System (MECAS).

ACADEMIC STANDARDS: ASSESSMENT OF ACHIEVEMENT IN REQUIRED SUBJECTS

Students demonstrate achievement of required subject area learning standards by successfully completing essential course tasks and associated common assessments. All students taking required high school courses of study will complete the common assessments. The multiple measures allow faculty to ascertain each student's academic achievement.

ACADEMIC SUPPORT and REMEDIATION

Mt. Ararat High School provides support and remediation for students who need help meeting the academic standards associated with required content. Teachers may make themselves available to students in need of academic help before and after school or at such times designate in their schedules. Parents are urged to contact their child's teacher or the appropriate academic department heads for information about academic support. Some of the available supports include Math and English Interventions, Academic Support Time (AST), and After School Supports.

**MAINE SCHOOL ADMINISTRATIVE DISTRICT NO. 75 CONTENT AREA
STANDARDS FOR GRADUATION
(adopted by the Board on May 7, 2015)**

English Language Arts

English Language Arts Standard 1

READING COMPREHENSION: Read and comprehend appropriately complex literary and informational texts independently and proficiently. (CCRA 10)

English Language Arts Standard 2

READING INTERPRETATION: Interpret, analyze, and evaluate appropriately complex literary and informational texts. (CCRA 7, 10)

English Language Arts Standard 3

WRITING ARGUMENTS: Write clear and coherent arguments for a range of tasks, purposes, and audiences. (CCWA 1, 4,10)

English Language Arts Standard 4

WRITING INFORMATIVE AND NARRATIVE TEXTS: Produce clear and coherent informative and narrative writing for a range of tasks, purposes, and audiences. (CCWA 2, 3, 4, 10)

English Language Arts Standard 5

WRITING PROCESS: Develop and strengthen writing. (CCWA 5)

English Language Arts Standard 6

WRITING RESEARCH: Conduct short and sustained research projects based on focused questions, demonstrating understanding of the subject under investigation. (CCWA 7, 10)

English Language Arts Standard 7

SPEAKING AND LISTENING DISCUSSION: Initiate and participate effectively in a range of discussions, responding thoughtfully to diverse perspectives, and expressing ideas clearly and persuasively. (CCSLA 1)

English Language Arts Standard 8

SPEAKING AND LISTENING PRESENTATION: Present information, findings, and supporting evidence, conveying a clear and distinct perspective (CCSLA 4)

(It should be noted that the research- related standards listed above can be applied in any of the content areas that follow.)

Mathematics

Mathematics Standard 1

NUMBER AND QUANTITY: Reason and model quantitatively, using units and number systems to solve problems.

Mathematics Standard 2

ALGEBRA: Interpret, represent, create and solve algebraic expressions.

Mathematics Standard 3

FUNCTIONS: Interpret, analyze, construct, and solve linear, quadratic, and trigonometric functions.

Mathematics Standard 4

GEOMETRY: Prove, understand, and model geometric concepts, theorems, and constructions to solve problems.

Mathematics Standard 5

STATISTICS & PROBABILITY: Interpret, infer and apply statistics and probability to analyze data and reach and justify conclusions.

Science

Science Standard 1

PHYSICAL SCIENCES - STRUCTURE/PROPERTIES OF MATTER, FORCES, AND INTERACTIONS:

Understand and analyze matter, reactions and physical systems as demonstrated through the integration of scientific and engineering practices and cross-cutting concepts (PS 1 + PS 2)

Science Standard 2

PHYSICAL SCIENCES - ENERGY, WAVES, AND ELECTROMAGNETIC RADIATION: Understand and analyze energy and the characteristics and dynamics of waves as demonstrated through the integration of scientific and engineering practices and cross-cutting concepts (PS 3 + PS 4)

Science Standard 3

LIFE SCIENCES - STRUCTURE, FUNCTION, AND INFORMATION PROCESSING: Understand and analyze molecular, structural, and chemical biology as demonstrated through the integration of scientific and engineering practices and cross-cutting concepts (LS 1)

Science Standard 4

LIFE SCIENCES - MATTER AND ENERGY IN ORGANISMS AND ECOSYSTEMS:

Understand and analyze the characteristics, functions, and behavioral interactions within an ecosystem as demonstrated through the integration of scientific and engineering practices and cross-cutting concepts (LS 2)

Science Standard 5

LIFE SCIENCES - GROWTH, DEVELOPMENT, AND REPRODUCTION OF ORGANISMS, NATURAL SELECTION, AND ADAPTATIONS:

Understand and analyze genetics, adaptation, and biodiversity as demonstrated through the integration of scientific and engineering practices and cross-cutting concepts (LS 3 + LS 4)

Science Standard 6

EARTH AND SPACE SCIENCES - EARTH, SPACE, AND THE UNIVERSE: Understand and analyze the origins, interactions and relationships between and among the earth, our solar system, and the universe as demonstrated through the integration of scientific and engineering practices and cross-cutting concepts (ESS 1)

Science Standard 7

EARTH AND SPACE SCIENCES - EARTH SYSTEMS: Understand and analyze earth's systems and the relationship between human activity and the earth as demonstrated through the integration of scientific and engineering practices and cross-cutting concepts (ESS 2 + ESS 3)

Science Standard 8

ENGINEERING, TECHNOLOGY, AND APPLICATION OF SCIENCE: Demonstrate engineering concepts across multiple disciplines and novel situations as demonstrated through the integration of scientific and engineering practices and cross-cutting concepts (ETS 1 + ETS 2).

Social Studies

Social Studies Standard 1

CIVIC ENGAGEMENT: Apply the attributes of a responsible and involved citizen to affect a real world issue based on a local need. (MLR, A2 + A3)

Social Studies Standard 2

CIVICS AND GOVERNMENT: Apply understanding of the ideals and purposes of founding documents, the principles and structures of the constitutional government in the United States, and the American political system to analyze interrelationships among civics, government and politics in the past and the present, in Maine, the United States and the world. (MLR, B)

Social Studies Standard 3

ECONOMICS: Understand and apply the concepts and processes from economics to understand issues of personal finance and issues of production, distribution and consumption in the community, Maine, the United States and the world. (MLR C)

Social Studies Standard 4

GEOGRAPHY: Analyze the physical, human and environmental geography of Maine, the United States and various regions of the world to evaluate the interdependent relationships and challenges facing human systems in the past, present and future. (MLR D)

Social Studies Standard 5

HISTORY: Apply and demonstrate knowledge of major eras, enduring themes, turning points and historic influences to analyze the forces of continuity and change in the community, in Maine, the United States and the world. (MLR E)

World Language

INTERPERSONAL COMMUNICATION*: Engage in conversations and informal written correspondence on a variety of topics. (MLR A1)

INTERPRETIVE COMMUNICATION: Understand and interpret written and spoken language on a variety of topics. (MLR A2)

PRESENTATIONAL COMMUNICATION: Present information, concepts and ideas, orally and in writing, to an audience of listeners or readers on a variety of topics. (MLR A3)

COMPARISON OF PRACTICES, PRODUCTS AND PERSPECTIVES: Compare the nature of language and the culture(s) of the target language with one's own. (MLR A4, B1-3, C2)

COMMUNITIES: Encounter and use the target language both in and beyond the classroom for personal enjoyment and lifelong learning. (MLR C1, D1)

Visual and Performing Arts

Visual and Performing Arts Standard 1

DISCIPLINARY LITERACY: Students show literacy in the discipline through understanding and demonstrating concepts, skills, terminology, and processes.

Visual and Performing Arts Standard 2

CREATION, PERFORMANCE, EXPRESSION: Students create, perform/produce, and express ideas through the art discipline.

Visual and Performing Arts Standard 3

CREATIVE PROBLEM SOLVING: Students approach artistic problem-solving using multiple solutions and the creative process.

Visual and Performing Arts Standard 4

AESTHETICS AND CRITICISM: Students describe, analyze, interpret, and evaluate art.

Visual and Performing Arts Standard 5

CONNECTIONS: Students understand the relationship among the arts, history and world culture; and they make connections among the arts and to other disciplines, to goal-setting, and to interpersonal interaction.

Health Education and Physical Education

Health Education Standard 1

HEALTH CONCEPTS: Students comprehend concepts related to health promotion and disease prevention to enhance health. (MLR A)

Health Education Standard 2

HEALTH INFORMATION, PRODUCTS, AND SERVICES: Demonstrate the ability to access valid health information, services and products to enhance health. (MLR B)

Health Education Standard 3

HEALTH PROMOTION AND RISK REDUCTION: Demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks. (MLR C)

Health Education Standard 4

INFLUENCES ON HEALTH: Analyze the ability of family, peers, culture, media, technology and other factors to enhance health. (MLR D)

Health Education Standard 5

ADVOCACY, DECISION-MAKING AND GOAL-SETTING SKILLS: Demonstrate the ability to use interpersonal communication and advocacy skills; make decisions; and set goals to enhance personal, family and community health. (MLR E, F)

Physical Education Standard 1

MOVEMENT/MOTOR SKILLS AND KNOWLEDGE: Demonstrate the fundamental and specialized motor skills and apply principles of movement for improved performance. (MLR G)

Physical Education Standard 2

PHYSICAL FITNESS ACTIVITIES AND KNOWLEDGE: Demonstrate and apply fitness concepts. (MLR H)

Physical Education Standard 3

PERSONAL AND SOCIAL SKILLS AND KNOWLEDGE: Demonstrate and explain responsible personal behavior and responsible social behavior in physical activity settings. (MLR I)

Career and Education Development

Career and Education Development Standard 1

SELF -KNOWLEDGE AND INTERPERSONAL RELATIONSHIPS: Assess and demonstrate a thorough understanding of the knowledge, attitudes, behaviors and skills needed to be successful in school, careers, civic life, and relationships with others. (NCDG PS1, PS2)

Career and Education Development Standard 2

EDUCATION, CAREER AND LIFE ROLES: Demonstrate an understanding of the relationship between the changing nature of work in a 21st century global economy and educational requirements; how learning new skills and educational achievement lead to increased career options and lifelong learning. (NCDG ED 1, ED2 ,CM3, CM5)

Career and Education Development Standard 3

MAKING DECISIONS, UTILIZING A PLANNING PROCESS, CREATING OPPORTUNITIES AND MAKING MEANINGFUL CONTRIBUTIONS: Demonstrate effective decision -making and planning skills in pursuit of success in education, work and citizenship roles. (NCDG CM1, CM2, CM3, CM4)

Guiding Principles

A. A Clear and Effective Communication

Understands the attributes and techniques that positively impact constructing and conveying meaning for a variety of purposes and through a variety of modes.

B. A Self- Directed and Lifelong Learner

Understands the importance of embracing and nurturing a growth mindset.

C. A Creative and Practical Problem Solver

Skilled at selecting and applying a process of problem -solving to deepen understanding and determine whether redefining the goal is a better way of addressing a problem situation and continuing to consider other alternative solutions until one resonates as the best one.

D. A Responsible and Involved Citizen

Understands the interdependence within and across systems and brings to each situation the appropriate actions.

E. An Integrative and Informed Thinker

Skilled at using complex reasoning processes to make meaning.

COURSE REGISTRATION

The serious business of course registration period for the 2021-2022 academic year begins with the

publication of the *Program of Studies* and ends on the last day of school in June. During this time, students, parents, faculty, and staff work together to determine student schedules for the following academic year. The entire process involves planning then making choices and commitments. Registration influences the shape of the master schedule and the allocation of school resources such as faculty, staff, materials, and space.

Schedule-building

At the start of the course registration period, students consult with their advisors then with teachers of their current courses, who recommend subsequent courses and placements. If a teacher or department recommendation does not match a student's desired course or placement, that student's parents may override the teacher recommendation, providing the student meets published course prerequisites. As initial registration activities proceed, students receive information on required and elective courses and Region 10 Technical High School programs through the *Program of Studies* and other means. Students may then select any additional courses.

Schedule review / adjustment

After the schedule-building phase of the course registration period, each student receives a preliminary schedule. Students must review their preliminary schedules with their parents and, as needed, with school counselors and other faculty. Modifications must be made prior to the June 2021 close of the course registration period.

Step-Up Day

This annual event is important for the entire school community. On Step-Up Day, students receive course information from faculty who currently teach the courses the students are scheduled to take next year. Step-up day allows students the opportunity to review a draft of next year's schedule and request final changes in their selection of courses. The teaching faculty, school counselors, and school staff thus are better able to balance class sizes and provide an appropriate number of course sections.

Course registrations and schedules are considered final on the last day of school in June, 2021.

After the last day of school in June, a student's preliminary schedule becomes final. From that point on, a schedule may only be changed when:

- a department head approves a different academic placement,
- a school counselor determines the existence of a situation that requires intervention in the affected student's best academic interest (for example, a student may need to address particular graduation requirements or may have assumed an inappropriate course load), or
- a department head determines that course sections require balancing.

Mt. Ararat High School

COURSE / CREDIT CHECKLIST FOR GRADUATION

NAME _____ PROJECTED Y.O.G. _____

ADDRESS _____ TELEPHONE _____

PARENT INFO _____

First HS year

(grade 9)

- Advisory _____
- English _____
- Math _____
- Science _____
- Soc.St. _____
- Phys Ed I _____
- Fine Arts _____
- World Lang _____
- Elective(s): _____
- _____
- _____
- _____

Year 1 total

Second HS year

(grade 10)

- Advisory _____
- English _____
- Math _____
- Science _____
- Soc. St. _____
- PE II / Outdoor Ed _____
- Health _____
- Fine Arts _____
- World Lang. _____
- Elective(s): _____
- _____
- _____
- _____

Year 2 total

Third HS year

(grade 11)

- Advisory _____
- English _____
- Math _____
- Science _____
- Soc. St. _____
- Fine Arts _____
- World Lang. _____
- Elective(s): _____
- _____
- _____
- _____

Year 3 total

Fourth HS year

(grade 12)

- Advisory _____
- English _____
- Math _____
- Science _____
- Soc. St. _____
- Fine Arts _____
- World Lang. _____
- Elective(s): _____
- _____
- _____
- _____

Year 4 total

WORLD LANGUAGES

1211 French I (1 credit)
 1212 German I (1 credit)
 1213 Spanish I (1 credit)

MATHEMATICS

1370s Introduction to Coding (0.5 credit)
 1371 Computer Science (1 credit)

SCIENCE

1452s Astronomy (0.5 credit)
 1458s Marine Science (0.5 credit)
 1459s Wildlife (0.5 credit)
 1460 STEM/Pre-Engineering (0.5 credit)

VISUAL ARTS

2122s Drawing (0.5 credit)
 2123s Painting (0.5 credit)
 2125s Sculpture (0.5 credit)
 2128s Printmaking (0.5 credit)

MUSIC

2213s Beginning Guitar (0.5 credit)
 2232s Songwriting (0.5 credit)

JOBS FOR MAINE GRADUATES

6001a/b JMG - Freshman - fall/spring* (0.5 credit)

REGION 10

7000 Foundations of Technology (see Program of Studies for more info)

SOPHOMORE YEAR COURSE REGISTRATION 2021-2022

Sophomores must sign up for at least 6 credits

Published course requirements, including screening requirements, must be met. Students who wish to take a course at a level that is not recommended must have their parent's/guardian's documented approval.

Below are the courses available for sophomores.

REQUIRED COURSES
ENGLISH (1 credit of the following)

1121 Academic English II (1 credit)
 1122 Advanced English II (1 credit)

MATHEMATICS (1 credit of the following)

1320 Foundations in Geometry (1 credit)
 1321 Academic Geometry (1 credit)
 1331 Academic Algebra II (1 credit)
 1332 Advanced Algebra II (1 credit)
 1342 Advanced Pre Calculus (1 credit)

SCIENCE (1 credit of the following)

1420 Biology (1 credit)
 1421 Academic Biology (1 credit)
 1422 Advanced Biology (lab required)(1.5 credits)
 1422s Advanced Biology Lab

SOCIAL STUDIES (2 academic 0.5 credits -OR- 2 AP 0.5 credits)

1521a Academic Comparative Economics (0.5 credit)
 1521b Academic American Foreign Policy (0.5 credit)
 1522a AP European History A (0.5 credit)
 1522b AP European History B (0.5 credit)

FINE ARTS (0.5 credit if not yet fulfilled)

1 Visual Arts 0.5 credit elective
 -OR-
 2213s Beginning Guitar (0.5 credit)

HEALTH/PHYSICAL EDUCATION (Health & either PE II - OR- Outdoor Ed)

3220s PE II (0.5 credit)
 3221s Outdoor Education (0.5 credit)
 3222s Health (0.5 credit)

ELECTIVE COURSES

ENGLISH

- 1150a Creative Writing - fall* (0.5 credit)
- 1150b Creative Writing - spring* (0.5 credit)
- 1151a Journalism - fall+ (0.5 credit)
- 1151b Journalism - spring+ (0.5 credit)
- 1152s Sports Literature (0.5 credit)

WORLD LANGUAGES

- 1221 French II (1 credit)
- 1222 German II (1 credit)
- 1223 Spanish II (1 credit)
- 1231 French III (1 credit)
- 1232 German III (1 credit)
- 1233 Spanish III (1 credit)

MATHEMATICS

- 1370s Introduction to Coding (0.5 credit)
- 1371 Computer Science (1 credit)

SCIENCE

- 1452s Astronomy (0.5 credit)
- 1458s Marine Science (0.5 credit)
- 1459s Wildlife (0.5 credit)
- 1460 STEM/Pre-Engineering (0.5 credit)

VISUAL ARTS

- 2122s Drawing (0.5 credit)
- 2123s Painting (0.5 credit)
- 2125s Sculpture (0.5 credit)
- 2128s Printmaking (0.5 credit)
- 2131s Ceramics I (0.5 credit)
- 2132s Ceramics II (0.5 credit)

*Course can be taken either semester or both semesters

+Course offered as first semester only, or full year; Student MUST complete fall semester to take spring semester.

Continued on reverse

ELECTIVE COURSES CONTINUED

MUSIC

- 2210 Concert Band (1 credit)
- 2211 Wind Ensemble (1 credit)
- 2213s Beginning Guitar (0.5 credit)
- 2214s Guitar II (0.5 credit)
- 2221 Concert Choir (1 credit)
- 2222 Chamber Singers (1 credit)
- 2223 Treble Choir (1 credit)

2232s Songwriting (0.5 credit)

HEALTH/PHYSICAL EDUCATION

3231s Fit for Life (0.5 credit)

JOBS FOR MAINE GRADUATES

- 6002a JMG - Multiyear - fall* (0.5 credit)
- 6002b JMG - Multiyear - spring* (0.5 credit)

REGION 10

7000 Foundations of Technology (see Program of Studies for more info)

- 7001 Auto Collision Repair (3 credits)
- 7002 Auto Technology I (AM) (3 credits)
- 7003 Auto Technology II (PM) (3 credits)
- 7004 Building Trades (3 credits)
- 7005 Creative Digital Media (AM) (3 credits)
- 7006 Culinary Arts (3 credits)
- 7007 Early Childhood I (AM) (3 credits)
- 7008 Early Childhood II (PM) (3 credits)
- 7009 General Trades (3 credits)
- 7011 Health Occupations - EMT Basic (3 credits)
- 7013 Metal Fabrication & Welding (3 credits)
- 7014 Outdoor Powersports I (AM) (3 credits)
- 7015 Outdoor Powersports II (PM) (3 credits)

JUNIOR YEAR COURSE REGISTRATION 2021-2022

Juniors must sign up for at least 6 credits

Published course requirements, including screening requirements, must be met. Students who wish to take a course at a level that is not recommended must have their parent's/guardian's documented approval.

Below are the courses available for juniors.

REQUIRED COURSES

ENGLISH (2 of the following 0.5 credit Lang. & Lit. classes -OR- AP full credit; NOTE: Language & Literature: Research is a graduation requirement if not in AP)

- 1134-0 English III/IV WRL (0.5 credit)
- 1134-1 Language & Literature: Crime (0.5 credit)
- 1134-2 Lang. & Lit.: Hard Knock Life (0.5 credit)
- 1134-3 Lang. & Lit.: Media & Visual Literacy (0.5 credit)
- 1134-4 Language & Literature: Research (0.5 credit)
- 1134-5 Lang. & Lit.: Voices American Dream (0.5 credit)
- 1134-6 Lang. & Lit.: Writing in the Real World (0.5 credit)
- 1132 AP English Language & Composition** (1 credit)

MATHEMATICS (1 credit of the following)

- 1333 Algebra II Part I (1 credit)
- 1331 Academic Algebra II (1 credit)
- 1332 Advanced Algebra II (1 credit)
- 1341 Pre Calculus (1 credit)
- 1342 Advanced Pre Calculus (1 credit)
- 1351 Calculus** (1 credit)
- 1352 AP Calculus AB** (1 credit)

SCIENCE (1 credit of the following)

- 1430 Chemistry (1 credit)
- 1431 Academic Chemistry (1 credit)
- 1432 Advanced Chemistry (lab required 1.5 credits)
- 1432s Advanced Chemistry Lab
- 1433 Chemistry/Physics (1 credit)

SOCIAL STUDIES (2 academic 0.5 credits -OR- 2 AP 0.5 credits)

- 1531a Academic US History I (0.5 credit)

- 1531b Academic US History II (0.5 credit)
- 1532a AP United States History A** (0.5 credit)
- 1532b AP United States History B** (0.5 credit)

FINE ARTS (0.5 credit if not yet fulfilled)

- 1 Visual Arts 0.5 credit elective
- OR-**
- 2213s Beginning Guitar (0.5 credit)

HEALTH/PHYSICAL EDUCATION (0.5 credit if not yet fulfilled)

- 3220s PE II (0.5 credit)
- 3221s Outdoor Education (0.5 credit)

ELECTIVE COURSES

ENGLISH

- 1150a Creative Writing - fall* (0.5 credit)
- 1150b Creative Writing - spring* (0.5 credit)
- 1151a Journalism - fall⁺ (0.5 credit)
- 1151b Journalism - spring⁺ (0.5 credit)
- 1152s Sports Literature (0.5 credit)
- 1153a Understanding Film - fall⁺ (0.5 credit)
- 1153b Understanding Film - spring⁺ (0.5 credit)

WORLD LANGUAGES

- 1231 French III (1 credit)
- 1232 German III (1 credit)
- 1233 Spanish III (1 credit)
- 1241 French IV (1 credit)
- 1242 German IV (1 credit)
- 1243 Spanish IV (1 credit)
- 1261a Global Culture in Film - fall* (0.5 credit)
- 1261b Global Culture in Film - spring* (0.5 credit)

MATHEMATICS

- 1361 Statistics (1 credit)
- 1362 AP Statistics** (1 credit)
- 1370s Introduction to Coding (0.5 credit)
- 1371 Computer Science (1 credit)
- 1372 AP Computer Science** (1 credit)

SCIENCE

- 1452s Astronomy (0.5 credit)
- 1455 Human Anatomy & Physiology (1 credit)
- 1458s Marine Science (0.5 credit)
- 1459s Wildlife (0.5 credit)
- 1460 STEM/Pre-Engineering (0.5 credit)

SOCIAL STUDIES

- 1558s Psychology (0.5 credit)
- 1559s Sociology (0.5 credit)
- 1561a Art & Society Part I - fall* (0.5 credit)
- 1561b Art & Society Part II - spring* (0.5 credit)
- 1562a Music & Society Part I - fall* (0.5 credit)
- 1562b Music & Society Part II - spring* (0.5 credit)

*Course can be taken either semester or both semesters.
 †Course offered as first semester only, or full year. Student MUST complete fall semester to take spring semester.
 **Concurrent Enrollment opportunity.

Continued on reverse

ELECTIVE COURSES CONTINUED

VISUAL ARTS

- 2122s Drawing (0.5 credit)
- 2123s Painting (0.5 credit)
- 2124s Photography (0.5 credit)
- 2125s Sculpture (0.5 credit)
- 2128s Printmaking (0.5 credit)
- 2127 AP 2D Design** (1 credit)
- 2131s Ceramics I (0.5 credit)
- 2132s Ceramics II (0.5 credit)
- 2133 AP 3D Ceramics** (1 credit)

MUSIC

- 2210 Concert Band (1 credit)
- 2211 Wind Ensemble (1 credit)
- 2213s Beginning Guitar (0.5 credit)

- 2214s Guitar II (0.5 credit)
- 2221 Concert Choir (1 credit)
- 2222 Chamber Singers (1 credit)
- 2223 Treble Choir (1 credit)
- 2232s Songwriting (0.5 credit)

HEALTH/PHYSICAL EDUCATION

- 3231s Fit for Life (0.5 credit)
- 3232s Independent Living (0.5 credit)
- 3233s Resistance Training (0.5 credit)
- 3234s Team Sports (0.5 credit)

JOBS FOR MAINE GRADUATES

- 6002a JMG - Multiyear - fall* (0.5 credit)
- 6002b JMG - Multiyear - spring* (0.5 credit)

REGION 10

- 7001 Auto Collision Repair (3 credits)
- 7002 Auto Technology I (AM) (3 credits)
- 7003 Auto Technology II (PM) (3 credits)
- 7004 Building Trades (3 credits)
- 7005 Creative Digital Media (AM) (3 credits)
- 7006 Culinary Arts (3 credits)
- 7007 Early Childhood I (AM) (3 credits)
- 7008 Early Childhood II (PM) (3 credits)
- 7009 General Trades (3 credits)
- 7010 Health Occupations - CNA (3 credits)
- 7011 Health Occupations - EMT Basic (3 credits)
- 7012 HVAC (3 credits)
- 7013 Metal Fabrication & Welding (3 credits)
- 7014 Outdoor Powersports I (AM) (3 credits)
- 7015 Outdoor Powersports II (PM) (3 credits)

*Course can be taken either semester or both semesters.
 †Course offered as first semester only, or full year. Student MUST complete fall semester to take spring semester
 **Concurrent Enrollment opportunity.

SENIOR YEAR COURSE REGISTRATION 2021-2022

Seniors must sign up for at least 5 credits

Published course requirements, including screening requirements, must be met. Students who wish to take a course at a level that is not recommended must have their parent's/guardian's documented approval.

Below are the courses available for seniors.

REQUIRED COURSES

ENGLISH (0.5 credit of the following Lang. & Lit. courses and 0.5 credit Lang. & Lit.: Research -OR- AP full credit -OR- SMCC full credit)

- 1134-0 English III/IV WRL (0.5 credit)
- 1134-1 Language & Literature: Crime (0.5 credit)
- 1134-2 Lang. & Lit.: Hard Knock Life (0.5 credit)
- 1134-3 Lang. & Lit.: Media & Visual Literacy (0.5 credit)
- 1134-4 Language & Literature: Research (0.5 credit)
- 1134-5 Lang. & Lit.: Voices American Dream (0.5 credit)
- 1134-6 Lang. & Lit.: Writing in the Real World (0.5 credit)
- 1142 AP English Literature & Composition** (1 credit)
- 1143 SMCC English IV Composition 100** (1 credit)

MATHEMATICS (1 credit of the following)

- 1334 Algebra II Part II/Trigonometry (1 credit)
- 1341 Pre Calculus (1 credit)
- 1342 Advanced Pre Calculus (1 credit)
- 1351 Calculus** (1 credit)
- 1352 AP Calculus AB** (1 credit)
- 1353 AP Calculus BC** (1 credit)
- 1363 Statistics/Finance (1 credit)
- 1362 AP Statistics** (1 credit)

SCIENCE (1 credit of the following)

- 1433 Chemistry/Physics (1 credit)
- 1440 Physics (1 credit)
- 1441 Academic Physics (1 credit)
- 1442 Advanced Physics (lab required 1.5 credit)
- 1442s Advanced Physics Lab

SOCIAL STUDIES (2 academic 0.5 credits if not yet fulfilled)

- 1531a Academic US History I: 1775-1914 (0.5 credit)
- 1531b Academic US History II: 1914-Present (0.5 credit)

FINE ARTS (0.5 credit if not yet fulfilled)

- 1 Visual Arts 0.5 credit elective
- OR-
- 2213s Beginning Guitar (0.5 credit)

HEALTH/PHYSICAL EDUCATION (0.5 credit if not yet fulfilled)

- 3220s PE II (0.5 credit)
- 3221s Outdoor Education (0.5 credit)

ELECTIVE COURSES

ENGLISH

- 1150a Creative Writing - fall* (0.5 credit)
- 1150b Creative Writing - spring* (0.5 credit)
- 1151a Journalism - fall⁺ (0.5 credit)
- 1151b Journalism - spring⁺ (0.5 credit)
- 1152s Sports Literature (0.5 credit)
- 1153a Understanding Film - fall⁺ (0.5 credit)
- 1153b Understanding Film - spring⁺ (0.5 credit)

WORLD LANGUAGES

- 1241 French IV (1 credit)
- 1242 German IV (1 credit)
- 1243 Spanish IV (1 credit)
- 1251 French V (1 credit)
- 1252 German V (1 credit)
- 1253 Spanish V (1 credit)

1261a Global Culture in Film - fall* (0.5 credit)
1261b Global Culture in Film - spring* (0.5 credit)

MATHEMATICS

1363 Statistics/Finance (1 credit)
1362 AP Statistics** (1 credit)
1370s Intro to Coding (0.5 credit)
1371 Computer Science (1 credit)
1372 AP Computer Science** (1 credit)

SCIENCE

1450 AP Biology** (lab required 1.5 credits)
1450s AP Biology Lab
1451 AP Environmental Science** (lab required 1.5 credits)
1451s AP Environmental Science Lab
1452s Astronomy (0.5 credit)
1455 Human Anatomy & Physiology (1 credit)
1458s Marine Science (0.5 credit)
1459s Wildlife (0.5 credit)
1460 STEM/Pre-Engineering (0.5 credit)

*Course can be taken either semester or both semesters.

†Course offered as first semester only, or full year. Student MUST complete fall semester to take spring semester.

**Concurrent Enrollment opportunity.

Continued on reverse

ELECTIVE COURSES CONTINUED

SOCIAL STUDIES

1542 AP US Government & Politics** (1 credit)
1558s Psychology (0.5 credit)
1559s Sociology (0.5 credit)
1561a Art & Society Part I - fall* (0.5 credit)
1561b Art & Society Part II - spring* (0.5 credit)
1562a Music & Society Part I - fall* (0.5 credit)
1562b Music & Society Part II - spring* (0.5 credit)

VISUAL ARTS

2122s Drawing (0.5 credit)
2123s Painting (0.5 credit)
2124s Photography (0.5 credit)
2125s Sculpture (0.5 credit)
2128s Printmaking (0.5 credit)
2127 AP 2D Design** (1 credit)
2131s Ceramics I (0.5 credit)
2132s Ceramics II (0.5 credit)
2133 AP 3D Ceramics** (1 credit)

MUSIC

2210 Concert Band (1 credit)
2211 Wind Ensemble (1 credit)
2213s Beginning Guitar (0.5 credit)
2214s Guitar II (0.5 credit)
2221 Concert Choir (1 credit)
2222 Chamber Singers (1 credit)
2223 Treble Choir (1 credit)
2232s Songwriting (0.5 credit)

HEALTH/PHYSICAL EDUCATION

3231s Fit for Life (0.5 credit)
3232s Independent Living (0.5 credit)
3233s Resistance Training (0.5 credit)
3234s Team Sports (0.5 credit)

JOBS FOR MAINE GRADUATES

6003a JMG - Senior - fall* (0.5 credit)
6003b JMG - Senior - spring* (0.5 credit)

REGION 10

7001 Auto Collision Repair (3 credits)
7002 Auto Technology I (AM) (3 credits)
7003 Auto Technology II (PM) (3 credits)
7004 Building Trades (3 credits)
7005 Creative Digital Media (AM) (3 credits)
7006 Culinary Arts (3 credits)
7007 Early Childhood I (AM) (3 credits)
7008 Early Childhood II (PM) (3 credits)
7009 General Trades (3 credits)
7010 Health Occupations - CNA (3 credits)
7011 Health Occupations - EMT Basic (3 credits)
7012 HVAC (3 credits)
7013 Metal Fabrication & Welding (3 credits)
7014 Outdoor Powersports I (AM) (3 credits)
7015 Outdoor Powersports II (PM) (3 credits)
7100 Pre Apprenticeship (3 credits)

*Course can be taken either semester or both semesters.

†Course offered as first semester only, or full year. Student MUST complete fall semester to take spring semester.

** Concurrent Enrollment opportunity.

ADDITIONAL PROGRAMS

ADVISORY PROGRAM

1.25 credits (.25 credit per year grades 9-11, .5 credit grade 12)

The Mt. Ararat High School Advisory Program provides each student with an ongoing connection with a faculty member who can provide both academic and social support. Advisory activities include regular review of each student's academic progress, communication with parents, development of a post-secondary plan, discussion of school-wide issues, and other activities that build a sense of community and belonging within the school. The Advisory curriculum may be accessed on the Mt. Ararat High School website. All students are required to complete specific activities focused on career and education development standards including Freshmen completing a career project, Sophomores doing a budget activity, Juniors writing a resume, and Seniors fill out a college application and complete a Capstone project.

EARLY COLLEGE COURSES & PATHWAYS TO EARNING COLLEGE CREDIT

Juniors and seniors may qualify to enroll in college courses offered in partnership with community colleges and state universities. Students who successfully complete a college course may earn dual credit: 1 high school credit and 3 college credits which may be transferable to a college or university upon graduation. Courses are intended to supplement, not replace, high school required courses. Course options at other nearby colleges, such as Bowdoin College in Brunswick, can be explored as well. Interested students should check with their school counselor for course information, eligibility, registration, and financial assistance.

Please review the following information for details on current pathways to earning college credit:

ADVANCED PLACEMENT: Courses, Examinations, and Possible College Credit

Students can earn college credit for Advanced Placement (AP) coursework only by taking the actual AP Exams in accordance with the May AP Examination schedule. Students taking courses designated as "Advanced Placement" are expected to take the AP Examination associated with each course. The academic transcript for a student who elects not to take the corresponding AP Examinations is amended to read "Advanced" rather than "Advanced Placement." Students and their parents are encouraged to check the AP credit policies of particular colleges and universities by contacting the institutions or checking credit information through the College Board's website: <http://www.collegeboard.com/ap/creditpolicy/>.

AP4ME

The Maine Department of Education offers online Advanced Placement courses for all Maine public high school students. These courses are offered at no charge to Maine public high school students and the cost of books and materials are also included. AP4ME courses are taught by Maine certified teachers who receive extensive training not only in the specific AP content area, but also in the pedagogy of effective online teaching. The AP4ME classes are year-long online courses that follow an AP4ME school year calendar, this

calendar may differ from a student's own school calendar. AP4ME courses satisfy all College Board Advanced Placement course requirements.

CONCURRENT ENROLLMENT COURSES (Current partners include: SMCC and USM)

Concurrent enrollment courses are taught by Mt. Ararat High School teachers during the regular school day. Concurrent enrollment courses are available to 11th & 12th grade students who have a cumulative GPA of 3.0 or higher or have received a recommendation from their school counselor. By successfully completing a concurrent enrollment course a student will earn credit towards their Mt. Ararat diploma and if a student's achievement level meets or exceeds the level set by the post secondary institution a student is awarded college credit.

EARLY COLLEGE COURSES

Through the state of Maine High School Aspirations Program, eligible 11th & 12th grade students are able to register for entry-level college courses at a discounted rate. These college courses can be taken either online or at the college/university. Students should refer to the ExploreEC web portal to research various college course opportunities. A credit awarded to a student through the college/university in which they take a course will be posted to the student's Mt. Ararat High School transcript for high school credit but will not be calculated in the students overall GPA.

INDEPENDENT STUDY

A student may apply for Independent Study in order to pursue worthy educational goals that cannot be met through the regular academic program. Independent Study work is monitored and supported by a teacher who agrees to the student's request for such supervision. As part of the approval process, counseling services determine whether a course can be or could have been accessed through regular enrollment and whether the suggested study is educationally appropriate for the student to pursue. The appropriate academic department head reviews the time, faculty support, materials, credit and other provisions of the proposal and makes a recommendation to the school counselor.

ENGLISH LANGUAGE DEVELOPMENT PROGRAM

The English Language Development Program serves referred students who demonstrate limited English proficiency due to cultural relocation or similar circumstances. Students receive guided individualized instruction in acquiring literacy and communications skills in English. Students work on listening, speaking, reading, and writing. English language learner support is also offered to students who are proficient in basic communications skills but lack the cognitive academic English proficiency level to succeed in regular classes. The teacher consults with content area teachers in order to select and modify appropriate materials. Work completed in the context of program instruction may apply to various state and school requirements by prearrangement with the appropriate department head and approval of the principal.

SPECIAL EDUCATION SERVICES

Special Services provides an integrated educational program for students with documented disabilities, determined through an Individualized Education Plan (IEP) meeting. Contact the Special Services office at Mt. Ararat High School for more detailed information. The MSAD #75 Special Services Director can be reached at 729-1557.

CAREER PROGRAMS

JOBS FOR MAINE'S GRADUATES (JMG)

JMG - SENIOR #6003a (fall) and #6003b (spring)

Recommended level: 12

This is a class for seniors that will help students acquire the skills needed to successfully transition into adulthood. Topics covered include the college application process, apprenticeship programs and job shadowing, career exploration, resumes and cover letters, the job search, job interviews, managing your money, health and nutrition, buying and maintaining a car, academic support, building and supporting healthy relationships, communication, community service projects, and teamwork. Activities are frequently hands-on. Classes are small and class discussions are common. JMG provides an opportunity for students to figure out who they are, what they want for their future, what opportunities are available, and how to take advantage of them.

JMG - MULTI-YEAR #6002a (fall) and #6002b (spring)

JMG - 9th GRADE #6001a (fall) and #6001b (spring)

Recommended level: 9-11

The JMG Multi-Year Program is about individual students and their future. What is a student's interests? What is a student good at? What does a student find challenging? How does a student learn best? What makes for a successful team? Is a student a leader? What can a student do now to prepare for their future? To answer these questions, members of the class will engage in hands-on activities, discussions, and community service projects. Classes are small with a strong focus on creating a safe supportive environment that allows the class to function as a team.

INTERNSHIP

Recommended level: 11-12

The internship program is for juniors and seniors who might benefit from an on-the-job experience to assist them in their post-secondary planning. Students who might be interested in such an experience should see their school counselor.

ENGLISH

Academic Planning Notes:

- **English credits required: 4** (English I-IV; AP English courses, comprised of introductory college level work, also count for **required** English credits.)
- In order to proceed to the next course in the **required** English sequence, students must complete specific common assessments associated with these courses that demonstrate their achievement of English language arts proficiency.
- The scope and sequence of the English program means that students cannot take two **required**, sequenced English courses simultaneously for credit. However, 3rd- or 4th-year students who need an additional English credit for graduation may, with all required approvals, enroll in Critical Reading and Writing at Merrymeeting Adult Education concurrently with their enrollment in their regular English course or during the summer.
- Enrollment in Writing and Reading Lab III/IV and Literacy Workshop **requires** English department referral. The courses are not available as student selections during course registration.
- English electives do not satisfy state English **requirements**. However, Creative Writing applies to the state Fine Arts credit **requirement**.
- **REGION TEN TECHNICAL HIGH SCHOOL ENGLISH** course allows students with credit deficiencies in other required subjects to earn one of their four **required** state English credits at Region 10 and thus undertake or maintain involvement in their vocational program. However, course content, including unit scope and sequence and course assessments, differs from that of the Mt. Ararat High School English curriculum.

ENGLISH I 1 Credit

Ninth-grade (first-year) students take one of the following two courses:

Course Title: ACADEMIC ENGLISH I #1111

Suggested Grade Level: 9

Prerequisites: none

[Course Syllabus](#)

English I is a transitional course designed to further develop the language arts skills, concepts, and practices that students will need to grow as readers and writers throughout high school and beyond. Specifically, students explore how to become critical readers of literary text, including fiction and nonfiction. They also strive to become more effective communicators by sharpening their command of oral and written expression. This involves learning how to use the writing process – planning, drafting, revision, and editing – to produce articulate, well-crafted papers. Progress toward these goals is measured in five required common assessments: (1) analysis of argument, (2) culture reading project, (3) literary analysis of a Shakespearean passage, (4) living history presentation, and (5) thematic essay.

Learning Goals Associated with the Course:

- **Reading - How to understand & appreciate what you read**
 1. Determine themes of a grade-appropriate text and analyze its development in detail.
 2. Analyze the impact of literary devices and strategies on meaning and tone in grade-appropriate texts.
 3. Support analysis of grade-appropriate literary text with textual evidence.
 4. Support analysis of grade-appropriate nonfiction text with textual evidence.
 5. Determine the meaning of words as they are used in a text.
- **Writing - How to produce a quality piece of writing**
 1. Write clear and cohesive arguments.
 2. Write clear and cohesive informative/explanatory texts.

3. Write narratives to develop real or imagined experiences or events.
4. Demonstrate command of conventions of standard English grammar and usage when writing.
5. Use the skills and strategies of the writing process including pre-drafting, drafting, and revising based on feedback.
6. Collect, evaluate, and integrate accurate information into a fictional narrative text while avoiding over-reliance on any one source.

● ***Speaking & Listening - How to participate effectively in discussions and presentations***

1. Come to group discussions prepared, having read and researched material.
2. Use voice and other oral communication skills to deliver focused and cohesive presentations.
3. Behave in respectful and supportive ways as members of an audience.

Course Title: ADVANCED ENGLISH I #1112

Suggested Grade Level: 9

Prerequisites: *participation in guided advanced study in English Language Arts learning goals in the eighth grade; department screening including completion of summer work; students must demonstrate both the maturity and academic readiness to undertake advanced study as a high school freshman*

Course Syllabus

This course is intended for ninth graders who demonstrate (1) a strong interest in the study of language, literature, and writing, (2) proficiency in ninth-grade learning goals, and (3) the maturity and academic readiness to engage in an intensive, accelerated program of study. As readers and writers, students consider various literary genres (essays, speeches, poems, fiction, and drama), paying close attention to language features, form, and meaning. Students are expected to read regularly outside of class and to confer with their peers and teacher about their writing. Freshmen who successfully complete this course will be prepared to take Advanced English II in their sophomore year.

Learning Goals Associated with the Course:

1. Reading - How to understand & appreciate what you read

1. Determine the themes of advanced literary text and analyze their development with detail and insight.
2. Analyze the impact of literary devices and strategies to enrich the reading, analysis, and/or writing of poetry.
3. Determine central ideas of advanced nonfiction text and analyze their development with detail and insight.
4. Determine the meaning of words as they are used in a text.
5. Support analysis of advanced nonfiction text with apt selection of textual evidence.
6. Support analysis of advanced literary text with apt selection of textual evidence and citations.

2. Writing - How to produce a quality piece of writing

1. Write narratives to develop real or imaginary experiences using purposeful techniques, details, and diction.
2. Write clear and cohesive arguments using valid reasoning and appropriate evidence.
3. Use the skills and strategies of the writing process including pre-drafting, drafting, and revising based on peer- and teacher-feedback.
4. Collect, evaluate, and integrate information into a coherent text.
5. Employ the conventions of MLA formatting and citations.
6. Demonstrate command of conventions of standard English grammar and usage when writing.

3. Speaking & Listening - How to participate effectively in discussions and presentations

1. Respond thoughtfully to diverse perspectives.
2. Use voice and other oral communication skills to deliver effective presentations to an audience.
3. Behave in respectful and supportive ways as members of an audience.

ENGLISH II 1 Credit

Prerequisite: Academic or Advanced English I

Students who have earned English I credit take one of the following two courses:

Course Title: ACADEMIC ENGLISH II #1121

Suggested Grade Level: 10

Prerequisites: *Academic or Advanced English I*

Students deepen their awareness and appreciation of literary form and meaning. They write and revise regularly as they learn how to build support for their ideas, observations, and positions. They also present and defend ideas in class discussions and group work. Students gather, synthesize, and shape information and opinions into an informed research project that culminates in an “I-Search” paper. Students confer regularly with their peers and teacher about their writing.

Learning Goals Associated with the Course:

1. Reading - How to understand & appreciate what you read

1. Determine themes of a grade-appropriate text and analyze its development in detail.
2. Analyze the impact of literary devices and strategies on meaning and tone in grade-appropriate texts.
3. Determine central ideas of a grade-appropriate text and analyze their development.
4. Compare and contrast two or more grade-appropriate texts and analyze how their juxtaposition contributes to meaning.
5. Support analysis of grade-appropriate nonfiction text with textual evidence.
6. Support analysis of grade-appropriate literary text with textual evidence and citations.

2. Writing - How to produce a quality piece of writing

1. Write clear and cohesive arguments using valid reasoning and appropriate evidence.
2. Acknowledge and refute counterclaim.
3. Write clear and cohesive informative/explanatory texts to examine and convey complex ideas, concepts, and information.
4. Use the skills and strategies of the writing process including pre-drafting, drafting, and revising based on feedback.
5. Demonstrate command of conventions of standard English grammar and usage when writing.
6. With guidance, collect, evaluate, and integrate information into a coherent text.
7. Employ the conventions of MLA formatting and citations.

3. Speaking & Listening - How to participate effectively in discussions and presentations

1. Respond thoughtfully to diverse perspectives.
2. Make strategic use of digital media in presentations.
3. Adapt presentation style to appropriate contexts and tasks.
4. Behave in respectful and supportive ways as members of an audience.

Course Title: ADVANCED ENGLISH II #1122

Suggested Grade Level: 10

Prerequisites: *Academic or Advanced English I; department screening including completion of summer work; students must demonstrate readiness to undertake advanced study through achievement in freshman English course*

[Course Syllabus](#)

Students who successfully complete this course will be prepared to undertake introductory college-level work in subsequent AP English courses. This course is intended for students with strong interest in the study of language, literature, and writing who are ready to do intensive, accelerated work. As readers and writers, students consider various literary genres (essays, speeches, poems, fiction, and drama), paying close attention to language features, form, and meaning. Students complete a major research project and confer regularly with their peers and teacher about their writing.

Learning Goals Associated with the Course:

1. Reading - How to understand & appreciate what you read

1. Determine themes of a grade-appropriate text and analyze its development in detail.
2. Analyze the impact of literary devices and strategies on meaning and tone in grade-appropriate texts.
3. Determine central ideas of a grade-appropriate text and analyze their development.
4. Determine the meaning of words as they are used in a text.
5. Compare and contrast two or more grade-appropriate texts and analyze how their juxtaposition contributes to meaning.
6. Support analysis of grade-appropriate nonfiction text with textual evidence.
7. Support analysis of grade-appropriate literary text with textual evidence and citations.

2. Writing - How to produce a quality piece of writing

1. Write clear and cohesive arguments using valid reasoning and appropriate evidence.
2. Acknowledge and refute counterclaim.
3. Write clear and cohesive informative/explanatory texts to examine and convey complex ideas, concepts, and information.
4. Use the skills and strategies of the writing process including pre-drafting, drafting, and revising based on feedback.
5. Demonstrate command of conventions of standard English grammar and usage when writing.
6. Collect, evaluate, and integrate information into a coherent text.
7. Employ the conventions of MLA formatting and citations.

3. Speaking & Listening - How to participate effectively in discussions and presentations

1. Respond thoughtfully to diverse perspectives.
2. Adapt presentation style to appropriate contexts and tasks.
3. Behave in respectful and supportive ways as members of an audience.

ENGLISH III & ENGLISH IV 0.5 Credit

Prerequisite: Academic English II or Advanced English II

Students who have earned English II credit take two of the following six courses each year (Research is a required course for either junior or senior year):

Course Title: ENGLISH III/IV WRL (WRITING AND READING LAB) #1134-0

Suggested Grade Level: 11-12

Prerequisites: *Academic English II or Advanced English II; English department referral*

Students who need to strengthen writing and reading skills in an individualized workshop environment are referred to this course. Students address topics that require research, interviews, writing, and revising. Each student writes a feature piece, usually a profile, as a capstone to his or her work. Students also read and work with quality written texts and films in connection with their writing. They also develop on-demand writing skills and confer regularly with their teacher about their writing.

Course Title: LANGUAGE AND LITERATURE: CRIME #1134-1

Suggested Grade Level: 11-12

Prerequisites: *Academic English II or Advanced English II*

[Course Syllabus](#)

Are you interested in the psychology behind what causes someone to commit an unthinkable crime? Would you like to explore the differences between nature and nurture, good and evil? In this class, students will analyze various aspects of crime and also examine the criminals who commit them. Students will read a wide variety of both fiction and non-fiction as they look to gain a comprehensive understanding of crime and its place in society.

Learning Goals Associated with the Course:

- **Reading - How to understand & appreciate what you read**
 1. Determine central idea of a text and analyze its development
 2. Support textual analysis of grade-appropriate non-fiction text with textual evidence and citations.
 3. Support analysis of nonfiction text with evidence and inferences
- **Writing - How to produce a quality piece of writing**
 1. Write clear and cohesive arguments
 2. Acknowledge and refute counterclaim
 3. Write narratives to develop real or imaginary events
 4. Use the writing process to develop a piece of writing
 5. Demonstrate command of conventions
 6. Collect, evaluate, and integrate information into a coherent text while avoiding over-reliance on any one source.
- **Speaking & Listening - How to participate effectively in discussions and presentations**
 1. Come to group discussions prepared, having read and researched material.
 2. Use oral communication skills to deliver focused and cohesive presentations.
 3. Behave in respectful and supportive ways as a member of an audience.

Course Title: LANGUAGE AND LITERATURE: HARD KNOCK LIFE #1134-2

Suggested Grade Level: 11-12

Prerequisites: *Academic English II or Advanced English II*

[Course Syllabus](#)

Students often ask why we always read books about sadness and adversity in English classes. Readers throughout history have always been drawn to fictional stories of adversity that allow them to confront their fears, face their personal demons, and feel the strength of those who emerge from trauma, danger, and darkness in triumph. Consequently, many of the most notable works of fiction are centered on protagonists who follow this path.

Memoir is not biography; memoir is not reporting; memoir inhabits a magical space between fiction and nonfiction. Memoir writing uses fiction devices such as dialogue, sensory language, setting, and character development, while also telling a true story about the writer in a personal manner. Readers of memoirs often find a friend and solace in these deeply personal stories. Writers of memoirs are compelled to tell their story, the one only they can tell, in order to share examples of perseverance, recovery, survival, and redemption.

In this class, we will explore stories of adversity, both fictitious and true, and the impact they have on us as individuals and on society.

Learning Goals Associated with the Course:

- **Reading - How to understand & appreciate what you read**
 1. Support analysis of literary text with evidence and inferences.

2. Determine theme of literary text and analyze its development.
 3. Analyze impact of literary devices/strategies on meaning and tone.
 4. Support analysis of literary text with evidence and inferences.
- ***Writing - How to produce a quality piece of writing***
 1. Write narratives to develop real or imaginary events
 2. Collect, evaluate, and integrate information into a narrative while avoiding over-reliance on any one source.
 - ***Speaking & Listening - How to participate effectively in discussions and presentations***
 1. Come to group discussions prepared, having read and researched material.
 2. Use oral communication skills to deliver focused and cohesive presentations

Course Title: LANGUAGE AND LITERATURE: MEDIA AND VISUAL LITERACY #1134-3

Suggested Grade Level: 11-12

Prerequisites: *Academic English II or Advanced English II*

[Course Syllabus](#)

Photographs, advertisements, maps, websites, television programs and movies, artwork: we are constantly 'reading' non-print texts for meaning. This course will provide the opportunity to consider the visual messages being broadcast through understanding and evaluating the purpose, author, subject, medium and genre, composition, audience, and context which shapes those texts' meanings. Students can expect regular analytical writing in response to the viewed texts. Students will also design a series of projects in selected types of non-print texts (e.g. advertisements, book covers, film trailers, and maps) using software available on MLTI laptops to demonstrate knowledge of the principles of visual literacy in a hands-on way.

Learning Goals Associated with the Course:

- ***Reading - How to understand & appreciate what you read***
 1. Understand that images are messages that are deliberately constructed with economic, political, social, and aesthetic purposes
 2. Analyze the elements of a single image (photograph, chart/graph, artwork, advertisement, map)
 3. Analyze the elements of a series of images (graphic novel, photo series, movie scene)
 4. Analyze the ways in which context and juxtaposition of text and image affect the message
- ***Writing - How to produce a quality piece of writing***
 1. Write critically about the ways in which visual images communicate
 2. Construct deliberate messages with economic, political, social, and aesthetic purposes and reflect on choices made within their own work
- ***Speaking & Listening - How to participate effectively in discussions and presentations***
 1. Write critically about the ways in which visual images communicate
 2. Select and consciously use technology for creation of clear, effective communications, mindful of audience

Course Title: LANGUAGE AND LITERATURE: RESEARCH #1134-4 (this is a required course for graduation)

Suggested Grade Level: 11-12

Prerequisites: *Academic English II or Advanced English II*

[Course Syllabus](#)

The centerpiece of this course is research. Students will develop skills to refine search queries in order to get valid, appropriate and accurate research results. Students will evaluate information found in sources on the basis of accuracy, validity, appropriateness for needs, importance, and social and cultural context. Students will gather information that is relevant to the particular lens for which they are focusing their research. The student throughout the course will demonstrate persistence by continuing to pursue information to gain a broad perspective on a variety of topics. Students will also demonstrate they know how to respect the intellectual property rights of creators and producers by using citations correctly. Ultimately students will sharpen their information gathering skills and synthesize various opinions into an informed conclusion during a major research project culminating into a formal academic paper.

*Note: This is a required course for graduation

Learning Goals Associated with the Course:

- ***Reading - How to understand & appreciate what you read***
 1. Support analysis of grade-appropriate nonfiction text with textual evidence.
- ***Writing - How to produce a quality piece of writing***
 1. Write clear and cohesive arguments using valid reasoning and appropriate evidence.
 2. Write clear and cohesive informative/explanatory texts to examine and convey complex ideas, concepts, and information.
 3. Use the skills and strategies of the writing process including pre-drafting, drafting, and revising based on feedback.
 4. Demonstrate command of the conventions of standard English grammar and usage when writing.
 5. With guidance, collect, evaluate, and integrate information into a coherent text.
 6. Employ the conventions of MLA formatting and citations.
- ***Speaking & Listening - How to participate effectively in discussions and presentations***
 1. Adapt presentation style to appropriate contexts and tasks.
 2. Behave in respectful and supportive ways as members of an audience.

Course Title: LANGUAGE AND LITERATURE: VOICES OF THE AMERICAN DREAM #1134-5

Suggested Grade Level: 11-12

Prerequisites: *Academic English II or Advanced English II*

[Course Syllabus](#)

In this American Literature class, students will study works of prose, poetry, drama, and fiction in relation to their historical and cultural contexts. Texts will be selected from among a diverse group of authors for what they reflect and reveal about the evolving American experience and character, with an emphasis on the difficulties of living at the fringes of American culture with the promise of a Great American Dream.

Learning Goals Associated with the Course:

- ***Reading - How to understand & appreciate what you read***
 1. Analyze impact of literary devices/ rhetorical strategies on meaning and tone.
 2. Support analysis of literary text with evidence and inferences.
 3. Determine theme of literary text and analyze its development.
- ***Writing - How to produce a quality piece of writing***
 1. Write narratives to develop real or imaginary events
 2. Use the writing process to develop a piece of writing
 3. Demonstrate command of conventions
- ***Speaking & Listening - How to participate effectively in discussions and presentations***
 1. Come to group discussions prepared, having read and researched material.

2. Use oral communication skills to deliver focused and cohesive presentations.

Course Title: LANGUAGE AND LITERATURE: WRITING IN THE REAL WORLD #1134-6

Suggested Grade Level: 11-12

Prerequisites: *Academic English II or Advanced English II*

[Course Syllabus](#)

Writing in the Real World is a semester elective that engages students in writing for real-world purposes. We develop and apply writing skills to a range of authentic tasks that students are likely to encounter in their personal and professional lives—including job applications, consumer reviews, and letters to the editor. Beyond its importance to academic success, the ability to write well is the cornerstone of adult literacy. Authentic modeling and mentor texts provide essential guidance as students practice and go public with writing in the real world.

Learning Goals Associated with the Course:

- ***Reading - How to understand & appreciate what you read***
 1. Determine central ideas of a grade-appropriate text and analyze their development.
 2. Support analysis of nonfiction text with evidence and inferences.
 3. Analyze impact of literary devices/ rhetorical strategies on meaning and tone.
- ***Writing - How to produce a quality piece of writing***
 1. Write clear and cohesive arguments.
 2. Write clear and cohesive informative / explanatory texts.
 3. Use the writing process to develop a piece of writing.
 4. Demonstrate command of standard English language conventions (grammar and usage).
 5. Acknowledge and refute counterclaims.
 6. Independently collect, evaluate, and integrate information into a coherent text.
- ***Speaking & Listening - How to participate effectively in discussions and presentations***
 1. Use oral communication skills to deliver focused and cohesive presentations.
 2. Behave in respectful and supportive ways as an audience member.

SOUTHERN MAINE COMMUNITY COLLEGE DUAL ENROLLMENT *1 Credit*

Course Title: SMCC ACADEMIC ENGLISH IV COMPOSITION 100 #1143

Suggested Grade Level: 12

Prerequisites: *Academic English III or AP English Language & Composition; appropriate score on Accuplacer; teacher recommendation*

[Course Syllabus](#)

Motivated students are invited to apply for this opportunity to earn college credit as well as the required credit for high school graduation in their final English class at MTA. English Composition 100 is the introduction to college writing across the curriculum. It emphasizes the process of drafting, revising, and editing written work in a variety of rhetorical modes. The course explores the distinctions between spoken and written, formal and informal uses of language. It also provides an introduction to research and the task of producing a formal research paper and fulfills the Senior Paper graduation requirement. Additionally, we will consider various works of literature, including drama, film, fiction, nonfiction, and short stories. Titles may include *The Kite Runner*, *The Things They Carried*, and *Death of a Salesman*. SMCC attendance and late-work policies will be enforced.

***In order to be successful in the course, it is strongly recommended that students take the Accuplacer no more than twice to meet the minimum score.

ADVANCED PLACEMENT ENGLISH COURSES 1 Credit

Prerequisite: department screening, including completion of required summer work; students must demonstrate readiness to undertake introductory college-level study through achievement in previous high-school-level English courses

College-level credit or advanced college or university course placement may be earned depending on AP exam score and college or university policy.

Course Title: AP ENGLISH LANGUAGE AND COMPOSITION #1132

Suggested Grade Level: 11-12

Prerequisites: *see above*

Students in this introductory college-level course will have previously demonstrated strong writing and analytical skills. Students consider a broad and challenging array of prose selections and image-based texts concerning a wide range of important subjects. Through close reading, frequent writing, and purposeful inquiry, students develop their ability to work with language and deepen their understanding of rhetoric and argument. Students work extensively with nonfiction, including essays, speeches, letters, memoirs, and other writings by authors such as Didion, Capote, Dillard, White, Woolf, Lincoln, Swift, Hazlitt, Twain, Orwell, Mead, King, Mairs, Murray, Sontag, Wolff, Oates, and Shakespeare. Students confer with teachers about their writing in class and outside of class.

Course Title: AP ENGLISH LITERATURE AND COMPOSITION #1142

Suggested Grade Level: 12

Prerequisites: *see above*

This introductory college-level course is for students with an exceptional interest in and commitment to the study of imaginative literature: fiction, poetry, and drama. Students will have previously developed the strong writing and analytical skills that are needed for careful study of literature at the introductory college level. Students consider and explore the features, meaning, and value of various literary texts and their relationship to contemporary experience as well as to the times in which they were written. Writing conferences are also held regularly outside of class times. A senior paper is required.

ENGLISH ELECTIVES

NOTE: The availability of all English electives depends on sufficient student enrollment. Elective courses do NOT fulfill scope and sequence or credit requirements associated with English I-IV coursework.

Course Title: CREATIVE WRITING #1150a (fall) and/or #1150b (spring)

Suggested Grade Level: 9-12

Prerequisites: *satisfactory achievement in required English*

In Creative Writing, students explore various forms in poetry, fiction, creative nonfiction and drama. They are expected to cultivate their ability to write with precision and clarity while developing instincts for a variety of genres. Class operates on a workshop model wherein students are expected to share their writing for feedback and, in turn, to offer thoughtful and precise feedback to others. Over the duration of the course, students will write for a variety of audiences and will be expected to submit pieces for publication.

The ½ credit earned in Creative Writing may be applied towards Maine's Fine Arts requirement.

Course Title: JOURNALISM #1151a (fall) and #1151b (spring)

Suggested Grade Level: 9-12

Prerequisites: *course offered as fall semester only, or both semesters; students MUST complete fall semester in order to take spring semester*

In Journalism, students read and write investigative stories in short- and long-term form. The focus of this class is on story writing, with finished work published in an online newspaper. Students hone their skills in objective journalism, as well as opinion editorials, media reviews and editorial cartoons. Academically, the class explores the history of print journalism, while returning to the challenge of capturing and maintaining an audience in the 21st-century information age of “new media.” Students pay close attention to current events and leave the class as better informed citizens prepared to understand and interpret the goings-on in their world.

Course Title: SPORTS LITERATURE #1152s

Suggested Grade Level: 9-12

Prerequisites: *satisfactory achievement in required English*

The Literature of Sports is a one-semester English elective course designed for students from any grade level with varying abilities. Students will engage in reading, class discussion, writing, and projects centered on a wide array of topics to sports. Two major texts will be studied, one for each quarter of the semester. First, students will read *The Blind Side*, which deals with issues of homelessness, public education, and the rise of a future college and NFL football star. During the 2nd quarter students read *Eagle Blue*, the story of the Fort Yukon (Alaska) High School boys’ basketball team as they attempt to continue their regional championship success of past seasons. Students will also encounter frequent in-class reading selected from magazines, texts, newspapers, and online publications. Readings will be divided into units by sports—those covered will include football, basketball, boxing, baseball, soccer, and track and field. Students will complete a final research project on an individual, team, event, or controversy/topic related to athletics and present their research to the class.

Course Title: UNDERSTANDING FILM #1153a (fall) and #1153 (spring)

Suggested Grade Level: 11-12

Prerequisites: *course offered as fall semester only, or both semesters; students MUST complete fall semester in order to take spring semester*

Students in Understanding Film watch, analyze, and make films to support three goals: 1) to expand students’ taste, so that they can become an audience for a wide range of films; 2) to expand students’ critical awareness of what goes on in movies, so that they can see more in what they watch; 3) to give students experience in shooting and editing films, and working with soundtracks. Each quarter students complete at least two film projects and present them to the class. First semester develops basic skills; second semester focuses on documentaries, audio, and independent projects.

Course Title: LITERACY WORKSHOP #1170s

Suggested Grade Level: 9

Prerequisites: *students who need additional support in reading fluency and comprehension*

[Course Syllabus](#)

Students are referred to this course based on both interest and/or a need for literacy support. It has been designed to meet students’ individual needs in both reading fluency and comprehension. Students will learn how to improve their reading habits, reflect on their abilities, and set specific literacy goals. Course work involves support from a Reading Specialist, one-on-one reading conferences with the instructor, a workshop environment, book clubs with peers, modeling of effective reading strategies and practices, in-class reading sessions, and choice in reading material.

HEALTH

Academic Planning Notes:

- Health credit required: 1/2
- Specific course required: Health
- Electives do not satisfy the state health credit requirement

Course Title: HEALTH #3222s

Suggested Grade Level: 10

Prerequisites: *none*

[Course Syllabus](#)

Health means more than just the absence of illness. Your personal health affects everything about you and impacts all aspects of your life such as your relationships, career goals, attitudes, successes, etc. This course is designed to help teens not only survive, but also thrive in a challenging world as they study the various dimensions of health.

Learning Goals Associated with the Course:

1. Analyze the interrelationships of physical, mental/intellectual, emotional and social health.
2. Explain causes of common diseases, disorders, and other health problems and propose ways to reduce, prevent or treat them.
3. Analyze and describe how genetics and family history can impact personal Health.
4. Analyze complex health concepts related to personal and mental health, disease prevention, sexuality, alcohol and other drug use prevention.
5. Demonstrate healthy practices/behaviors to maintain or improve the health of self and others.
6. Design, implement and evaluate a plan for stress management.
7. Analyze how some health risk behaviors can influence the likelihood of engaging in unhealthy behaviors such as drug and alcohol use.

- Utilize effective communication skills with family, peers and others to enhance health.

HEALTH ELECTIVES

NOTE: these courses do NOT address Maine's health credit requirement.

Course Title: INDEPENDENT LIVING #3233s

Suggested Grade Level: 11-12

Prerequisites: none

Life after high school... Sounds magical, right? With freedom comes great responsibility. Independence is a privilege with much excitement but also many challenges. No matter where one's post-secondary plans lie, the goal of this course is to provide students with basic knowledge and skills for living independently to face common "adulting" challenges with confidence and fortitude. Independent Living is a combination of Financial Literacy coursework and skills-based Home Economics activities.

Financial Literacy topics include income & employment, income taxes, credit & loan management, banking basics, budgeting & consumerism.

Potential hands-on Home Economics topics include cooking & kitchen basics, professionalism & etiquette, clothing & household maintenance.

NOTE: this course does NOT address Maine's health credit requirement.

Learning Goals Associated with the Course:

1. Apply strategies to monitor income and expenses, plan for spending, and save for future goals.
2. Apply reliable information and systematic decision-making to personal finance decisions.
3. Develop strategies to control and manage credit and debit.
4. Explain and analyze the role of financial institutions and banking in personal finance.
5. Apply appropriate and cost-effective risk management strategies as they pertain to insurance, housing, advertising and purchasing, etc.
6. Understand the role of taxes as they pertain to employment and fill out and file federal and Maine tax forms.

MATHEMATICS

Academic Planning Notes:

- **Mathematics credits required: 3**
- **Students who plan to attend a community college, four-year college or university are strongly advised to complete four years of mathematics.**

- Typical sequence of courses for students who have successfully completed 8th Grade Math:

- √ Academic Algebra I
- √ Academic Geometry
- √ Academic Algebra II
- √ Pre-Calculus (and/or Statistics/Finance)

- Typical sequence of courses for students who have successfully completed Algebra I in the 8th grade:

- √ Advanced Geometry
- √ Advanced Algebra II
- √ Advanced Pre-Calculus
- √ AP Calculus AB (and/or AP Statistics)

- Typical sequence of courses for students who have demonstrated the need for additional classroom support and/or slower pacing to be successful in mathematics:

- √ Foundations in Algebra I
- √ Foundations in Geometry
- √ Algebra II Part 1
- √ Algebra II Part 2/Trigonometry

NOTE: *Students are placed in the above four courses through teacher recommendation or department head approval only.*

- Actual student paths over the course of four years may differ from the above examples. Placement of students in the appropriate level of a course is determined by mathematics teacher recommendations, and is done on a yearly basis.

- **Elective math courses do not satisfy mathematics credit requirements.**

- All courses count for one credit unless otherwise noted.

Course Title: FOUNDATIONS IN ALGEBRA I #1310

Suggested Grade Level: 9

Prerequisites: *none*

[Course Syllabus](#)

This course allows students to strengthen their understanding of Pre-Algebra concepts while studying topics in Algebra I. Students will have the opportunity to work with solving equations and inequalities in one variable, simplifying algebraic expressions, properties of exponents, linear equations and graphs. This course also includes integrated topics in geometry and statistics.

Learning Goals Associated with the Course:

1. Maintain fluency in the addition, subtraction, multiplication, and division of rational numbers.
2. Reason quantitatively, create expressions and solve equations that model real-life mathematical problems.
3. Understand the structure of expressions and use foundational skills to write, simplify and apply properties of operations to algebraic expressions.
4. Analyze linear equations and understand the process of reasoning associated with creating and solving them in one variable.
5. Represent and solve linear equations graphically and understand the connections between lines and their equations.
6. Solve systems of equations by graphing, substitution, elimination and apply these methods to solve real-life mathematical problems.
7. Perform basic arithmetic operations on monomials and polynomials.
8. Understand the concept of a function, to include the representation of functions using tables, graphs, mappings and basic function notation.
9. Use basic graphical and numerical techniques to analyze data in one and two variables and make inferences to justify conclusions.

Course Title: ACADEMIC ALGEBRA I #1311

Suggested Grade Level: 9

Prerequisites: *none*

[Course Syllabus](#)

This course includes topics in algebra such as solving equations and inequalities in one variable, exponents and radicals, radical expressions, linear equations in two variables, and quadratic equations. The course also integrates topics from geometry, probability and statistics. Reading and problem solving are emphasized throughout the course.

Learning Goals Associated with the Course:

1. Maintain fluency in the addition, subtraction, multiplication, and division of rational numbers.
2. Reason quantitatively, create expressions and solve equations that model real-life mathematical problems.
3. Understand the structure of expressions and use foundational skills to write, simplify and apply properties of operations to algebraic expressions.
4. Analyze linear equations and understand the process of reasoning associated with creating and solving them in one variable.
5. Represent and solve linear equations graphically and understand the connections between lines and their equations.
6. Solve systems of equations by graphing, substitution, elimination and apply these methods to solve real-life mathematical problems.

7. Analyze linear inequalities algebraically and graphically and understand the process of reasoning associated with creating and solving them in one variable.
8. Perform basic arithmetic operations on monomials and polynomials.
9. Understand the process of factoring as the inverse of multiplying and use it to generate equivalent expressions and to solve algebraic equations.
10. Understand the concept of a function, to include the representation of functions using tables, graphs, mappings and basic function notation.
11. Use basic graphical and numerical techniques to analyze data in one and two variables and make inferences to justify conclusions.

Course Title: ALGEBRA II, PART I #1333

Suggested Grade Level: 11

Prerequisites: *Geometry*

This course allows students to study a subset of topics from the Algebra II curriculum over the course of a full year. Topics include linear relations and functions, linear systems, polynomial operations and functions, quadratic functions, and an introduction to rational functions. Students who wish to complete the study of Algebra II should plan to follow this course with Algebra II Part II/Trigonometry.

Learning Goals Associated with the Course:

1. Analyze linear inequalities algebraically and graphically and understand the process of reasoning associated with creating and solving them in one variable.
2. Understand the process of factoring as the inverse of multiplying and use it to generate equivalent expressions and to solve algebraic equations.
3. Extend skills in reasoning quantitatively, creating expressions and solving equations that model real-life linear, quadratic and exponential problems.
4. Maintain fluency and extend skills in analyzing linear equations and inequalities and understand the reasoning associated with creating and solving them in one variable.
5. Maintain fluency and extend skills in solving systems of equations and inequalities by graphing, substitution, elimination and apply these methods to solve real-life mathematical problems.
6. Apply arithmetic operations and the properties of exponents to simplify, factor and solve polynomial and radical expressions and equations over the set of complex numbers.
7. Maintain fluency and extend skills in representing equations and inequalities in multiple forms, including function notation and graphing to understand the connections between lines and their equations.
8. Analyze and solve quadratic equations and inequalities by graphing, factoring, completing the square and use of the quadratic formula.
9. Maintain fluency and extend skills in using basic graphical and numerical techniques to analyze data in one and two variables and make inferences to justify conclusions.

Course Title: ACADEMIC ALGEBRA II #1331

Suggested Grade Level: 11

Prerequisites: *Geometry*

[Course Syllabus](#)

This course allows students to study topics from the Algebra II curriculum at a college preparation level. Topics include linear relations and functions, linear systems, polynomial operations and functions, quadratic functions, and an introduction to rational functions. Students can follow this course with Pre-Calculus for a fourth year of mathematics.

Learning Goals Associated with the Course:

1. Extend skills in reasoning quantitatively, creating expressions and solving equations that model real-life linear, quadratic and exponential problems.
2. Perform basic arithmetic operations on complex numbers.
3. Maintain fluency and extend skills in analyzing linear equations and inequalities and understand the reasoning associated with creating and solving them in one variable.
4. Maintain fluency and extend skills in solving systems of equations and inequalities by graphing, substitution, elimination and apply these methods to solve real-life mathematical problems.
5. Apply arithmetic operations and the properties of exponents to simplify, factor and solve polynomial and radical expressions and equations over the set of complex numbers.
6. Simplify rational expressions and solve and graph rational equations including direct and inverse variation.
7. Maintain fluency and extend skills in representing equations and inequalities in multiple forms, including function notation and graphing to understand the connections between lines and their equations.
8. Analyze and solve quadratic equations and inequalities by graphing, factoring, completing the square and use of the quadratic formula.
9. Analyze, solve and graph polynomial functions of higher degree and understand the relationship between a function and its zeros, factors and inverse.
10. Understand the relationship between the geometric descriptions, graphs and equations of conics.
11. Maintain fluency and extend skills in using basic graphical and numerical techniques to analyze data in one and two variables and make inferences to justify conclusions.

Course Title: ADVANCED ALGEBRA II #1332

Suggested Grade Level: 10

Prerequisites: *Advanced Geometry; department screening*

[Course Syllabus](#)

This course is intended for students who are ready for a more intensive study of algebra in preparation for Advanced Pre-Calculus and AP Calculus. In addition to the topics introduced in Academic Algebra II (above), students will study polynomial, radical, rational, exponential, and logarithmic functions and their graphs in depth. *This course requires summer work.*

Learning Goals Associated with the Course:

1. Extend skills in reasoning quantitatively, creating expressions and solving equations that model real-life linear, quadratic and exponential problems.
2. Perform basic arithmetic operations on complex numbers.
3. Maintain fluency and extend skills in analyzing linear equations and inequalities and understand the reasoning associated with creating and solving them in one variable.
4. Maintain fluency and extend skills in solving systems of equations and inequalities by graphing, substitution, elimination and apply these methods to solve real-life mathematical problems.
5. Apply arithmetic operations and the properties of exponents to simplify, factor and solve polynomial and radical expressions and equations over the set of complex numbers.
6. Simplify rational expressions and solve and graph rational equations including direct and inverse variation.
7. Maintain fluency and extend skills in representing equations and inequalities in multiple forms, including function notation and graphing to understand the connections between lines and their equations.

8. Analyze and solve quadratic equations and inequalities by graphing, factoring, completing the square and use of the quadratic formula.
9. Analyze, solve and graph polynomial functions of higher degree and understand the relationship between a function and its zeros, factors and inverse.
10. Analyze, solve and graph exponential and logarithmic functions.
11. Understand the relationship between the geometric descriptions, graphs and equations of conics.
12. Maintain fluency and extend skills in using basic graphical and numerical techniques to analyze data in one and two variables and make inferences to justify conclusions.

Course Title: ALGEBRA II, PART II / TRIGONOMETRY #1334

Suggested Grade Level: 12

Prerequisites: *Algebra II Part I or equivalent*

This course provides students an opportunity to strengthen their understanding of algebraic concepts and reinforce skills developed in the first part of Algebra II. Additional topics studied include radical equations and complex numbers, rational functions, sequences and series, probability, and trigonometry.

Learning Goals Associated with the Course:

1. Extend skills in reasoning quantitatively, creating expressions and solving equations that model real-life linear, quadratic and exponential problems.
2. Perform basic arithmetic operations on complex numbers.
3. Maintain fluency and extend skills in analyzing linear equations and inequalities and understand the reasoning associated with creating and solving them in one variable.
4. Maintain fluency and extend skills in solving systems of equations and inequalities by graphing, substitution, elimination and apply these methods to solve real-life mathematical problems.
5. Apply arithmetic operations and the properties of exponents to simplify, factor and solve polynomial and radical expressions and equations over the set of complex numbers.
6. Maintain fluency and extend skills in representing equations and inequalities in multiple forms, including function notation and graphing to understand the connections between lines and their equations.
7. Analyze and solve quadratic equations and inequalities by graphing, factoring, completing the square and use of the quadratic formula.
8. Maintain fluency and extend skills in using basic graphical and numerical techniques to analyze data in one and two variables and make inferences to justify conclusions.
9. Apply triangular trigonometry to solve geometric problems including real-world applications.
10. Use trigonometric functions to model periodic quantities and understand the characteristics of trigonometric graphs defined by using a unit circle.

Course Title: FOUNDATIONS IN GEOMETRY #1320

Suggested Grade Level: 10

Prerequisites: *Algebra I*

This course follows Foundations in Algebra I. It covers basic geometric topics using an activity approach. Students are encouraged to explore and investigate geometry using a variety of manipulatives and computer software. Topics covered include vocabulary, plane and solid figures, measurement, area, perimeter, volume, proportions, similarity, and if time permits, transformations, and trigonometry. Upon completion of this course, students would usually take Algebra II Part I as the third course in a three-year sequence.

Learning Goals Associated with the Course:

1. Reason quantitatively, create expressions and solve equations that model real-life problems in

geometry.

2. Maintain fluency of algebra skills in relation to solving geometric problems.
3. Identify points, lines, planes and angles and describe the relationships between them to include drawing and constructions.
4. Use properties of perpendicular and parallel lines to solve problems.
5. Classify and identify triangles and apply geometric theorems to show congruency and to solve problems.
6. Classify and identify quadrilaterals and apply geometric theorems to solve problems algebraically and graphically.
7. Identify similar figures and use ratios and proportions to solve problems.
8. Define trigonometric ratios and use those ratios and the Pythagorean Theorem to solve problems involving right triangles.
9. Solve real-world and mathematical problems involving areas of polygons and circles.
10. Visualize relationships between two and three-dimensional objects and solve real-world and mathematical problems involving surface area and volume of prisms, pyramids and spheres.
11. Use transformations to explore translations, reflections, size changes, and rotations.

Course Title: ACADEMIC GEOMETRY #1321

Suggested Grade Level: 10

Prerequisites: *Algebra I*

[Course Syllabus](#)

This course will help students develop an understanding of geometric figures and their properties. Skills in drawing, visualizing, and using geometric tools will be emphasized. Real-life applications will be included. Throughout the course, algebra will be integrated with geometric topics.

Learning Goals Associated with the Course:

1. Reason quantitatively, create expressions and solve equations that model real-life problems in geometry.
2. Maintain fluency of algebra skills in relation to solving geometric problems.
3. Identify points, lines, planes and angles and describe the relationships between them to include drawing and constructions.
4. Use properties of perpendicular and parallel lines to solve problems.
5. Classify and identify triangles and apply geometric theorems to show congruency and to solve problems.
6. Recognize and apply relationships between sides and angles in a triangle to prove triangles congruent and to solve problems.
7. Identify and use special segments in a triangle to solve problems and use the inequalities in triangles to apply relationships between sides and angles.
8. Classify and identify quadrilaterals and apply geometric theorems to solve problems algebraically and graphically.
9. Identify similar figures and use ratios and proportions to solve problems.
10. Define trigonometric ratios and use those ratios and the Pythagorean Theorem to solve problems involving right triangles.
11. Solve real-world and mathematical problems involving areas of polygons and circles.

12. Visualize relationships between two and three-dimensional objects and solve real-world and mathematical problems involving surface area and volume of prisms, pyramids and spheres.
13. Use transformations to explore translations, reflections, size changes, and rotations.
14. Use inductive and deductive reasoning to make conjectures both verbally, algebraically, and geometrically.
15. Use properties of circles to solve problems and find arc lengths and areas of sectors.

Course Title: ADVANCED GEOMETRY #1322

Suggested Grade Level: 9

Prerequisites: *Advanced* *Algebra* *I* *in* *8th* *grade*

[Course Syllabus](#)

The course content is similar to that of Academic Geometry. Students will develop an understanding of geometric figures and their properties. Skills in drawing, visualizing, and using geometric tools will be emphasized and real-life applications will be included. Throughout this course, algebra will be integrated with geometric topics, with additional emphasis on inductive/deductive reasoning, circles, and sectors. *This course requires summer work.*

Learning Goals Associated with the Course:

1. Reason quantitatively, create expressions and solve equations that model real-life problems in geometry.
2. Maintain fluency of algebra skills in relation to solving geometric problems.
3. Identify points, lines, planes and angles and describe the relationships between them to include drawing and constructions.
4. Use properties of perpendicular and parallel lines to solve problems.
5. Classify and identify triangles and apply geometric theorems to show congruency and to solve problems.
6. Recognize and apply relationships between sides and angles in a triangle to prove triangles congruent and to solve problems.
7. Identify and use special segments in a triangle to solve problems and use the inequalities in triangles to apply relationships between sides and angles.
8. Classify and identify quadrilaterals and apply geometric theorems to solve problems algebraically and graphically.
9. Identify similar figures and use ratios and proportions to solve problems.
10. Define trigonometric ratios and use those ratios and the Pythagorean Theorem to solve problems involving right triangles.
11. Solve real-world and mathematical problems involving areas of polygons and circles.
12. Visualize relationships between two and three-dimensional objects and solve real-world and mathematical problems involving surface area and volume of prisms, pyramids and spheres.
13. Use transformations to explore translations, reflections, size changes, and rotations.
14. Use inductive and deductive reasoning to make conjectures both verbally, algebraically, and geometrically.
15. Use properties of circles to solve problems and find arc lengths and areas of sectors.

Course Title: PRE-CALCULUS #1341**Suggested Grade Level:** 11-12**Prerequisites:** *Advanced Algebra II or Academic Algebra II with grade of C or better*[Course Syllabus](#)

This course is intended for students who wish to continue their study of mathematics and prepare for post-secondary requirements. Topics such as quadratic functions, polynomial functions, rational functions, transformations of graphs, exponential and logarithmic functions, and trigonometric functions are studied. The course will provide the necessary background for college level calculus.

Learning Goals Associated with the Course:

1. Analyze advanced concepts in functions that include linear, piecewise, absolute value, inverse and composite functions and use graphs to show how one variable is related to another.
2. Apply advanced skills in solving systems of equations and inequalities to solve real-life mathematical problems by graphing and using optimization techniques.
3. Analyze families of graphs and understand the effects of transformations.
4. Apply advanced mathematical modeling and graphing to polynomial and rational functions over the set of complex numbers.
5. Apply advanced mathematical modeling and graphing to exponential and logarithmic functions.
6. Apply triangular trigonometry to solve geometric problems including real-world applications.
7. Use trigonometric functions to model periodic quantities and understand the characteristics of trigonometric graphs defined by using a unit circle.

Course Title: ADVANCED PRE-CALCULUS #1342**Suggested Grade Level:** 11**Prerequisites:** *Advanced Algebra II; department screening*[Course Syllabus](#)

This course is intended for students who plan to study calculus, statistics or other college-level math courses in their senior or college years. All important pre-calculus topics are addressed, including but not limited to: polynomial functions, analytic geometry, exponential and logarithmic functions, complex numbers, trigonometry functions, sequences and series, matrices, combinatorics, probability and an introduction to calculus. *This course requires summer work.*

Learning Goals Associated with the Course:

1. Model real-life applications of sequences and series using patterns and formulas
2. Maintain fluency and extend skills in understanding the relationship between the geometric descriptions, graphs and equations of conics.
3. Analyze advanced concepts in functions that includes linear, piecewise, absolute value, inverse and composite functions and use graphs to show how one variable is related to another.
4. Apply advanced skills in solving systems of equations and inequalities to solve real-life mathematical problems by graphing and using optimization techniques.
5. Analyze families of graphs and understand the effects of transformations.
6. Apply advanced mathematical modeling and graphing to polynomial and rational functions over the set of complex numbers.
7. Apply advanced mathematical modeling and graphing to exponential and logarithmic functions.
8. Apply triangular trigonometry to solve geometric problems including real-world applications.

9. Use trigonometric functions to model periodic quantities and understand the characteristics of trigonometric graphs defined by using a unit circle.
10. Simplify and solve trigonometric functions using trigonometric identities.
11. Solve counting problems and use probabilities to evaluate outcomes of compound, mutually exclusive, independent and conditional events.

Course Title: CALCULUS #1351

Suggested Grade Level: 11-12

Prerequisites: *Pre-Calculus or Advanced Pre-Calculus with grade of B or better*

[Course Syllabus](#)

This course is offered to students who wish to prepare for postsecondary study in fields such as engineering, mathematics, physics, and applied science. Students will study topics such as limits, derivatives and their applications, and integral calculus with applications. *This course offers optional dual enrollment in USM Calculus A and the opportunity to earn 4 college credits.*

This course requires summer work.

Learning Goals Associated with the Course:

1. Maintain fluency in working with functions represented in a variety of ways (graphical, numerical, analytical, and/or verbal-) and understand the connections among these representations-.
2. Understand the limit process and evaluate limits analytically, graphically, and numerically.
3. Understand the meaning of the derivative in terms of a rate of change and find derivatives by applying differentiation rules to include implicit differentiation and higher-order derivatives.
4. Apply calculus techniques to analyze and graph functions and understand the relationship between the sign, direction and concavity of curves and their equations.
5. Use derivatives to solve a variety of applied problems including related rates and optimization.
6. Evaluate indefinite integrals and understand the meaning of the definite integral as a limit of Riemann sums, the net accumulation of change, and as an area.
7. Describe the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus and use integrals to solve a variety of applied problems.
8. Apply differentiation and integration techniques to exponential, logarithmic, trigonometric and inverse functions.
9. Model real-life situations with a function, a differential equation, or an integral and use calculus techniques to solve corresponding applied problems.

Course Title: AP CALCULUS AB #1352

Suggested Grade Level: 11-12

Prerequisites: *Pre-Calculus or Advanced Pre-Calculus; department screening*

[Course Syllabus](#)

This course is offered to students who want to prepare for a field requiring an extensive background in mathematics. Students will study all topics addressed in a first semester college calculus course, including limits, derivatives and integral calculus with applications. Students are prepared for the Advanced Placement Calculus Examination, which may enable them to earn college course credits. *This course requires summer work.*

Learning Goals Associated with the Course:

1. Maintain fluency in working with functions represented in a variety of ways (graphical, numerical, analytical, and/or verbal-) and understand the connections among these representations.
2. Understand the limit process and evaluate limits analytically, graphically, and numerically.
3. Understand the meaning of the derivative in terms of a rate of change and find derivatives by applying differentiation rules to include implicit differentiation and higher-order derivatives.
4. Apply calculus techniques to analyze and graph functions and understand the relationship between the sign, direction and concavity of curves and their equations.
5. Use derivatives to solve a variety of applied problems including related rates and optimization.
6. Evaluate indefinite integrals and understand the meaning of the definite integral as a limit of Riemann sums, the net accumulation of change, and as an area.
7. Describe the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus and use integrals to solve a variety of applied problems.
8. Apply differentiation and integration techniques to exponential, logarithmic, trigonometric and inverse functions.
9. Understand the relationship between slope fields and solutions to differential equations and use separation of variables to solve differential equations.
10. Represent and calculate the volume of solid figures using integrals.
11. Model real-life situations with a function, a differential equation, or an integral and use calculus techniques to solve corresponding applied problems.

Course Title: AP CALCULUS BC #1353

Suggested Grade Level: 12

Prerequisites: *AP Calculus AB or instructor's permission*

[Course Syllabus](#)

This course is offered to students who wish to enter college prepared to study multivariable calculus. The course will strengthen the student's mastery of the AB Calculus syllabus and extend to parametric, polar, and vector functions. It will expand the student's knowledge and understanding of limits, graphical behavior, derivatives, integrals and differential equations. This course will also introduce the student to polynomial approximations and series. Students prepare for the Advanced Placement BC Calculus Examination. *This course requires summer work.*

Learning Goals Associated with the Course:

1. Maintain fluency and extend skills in evaluating limits, derivatives and integrals to solve corresponding applied problems.
2. Apply advanced integration techniques to evaluate integrals to include integration by parts, partial fractions, and improper integrals.
3. Analyze curves given in parametric form, and use derivatives and integrals of parametric equations to solve applied problems including motion, vectors, and curve length.
4. Analyze curves given in polar form, evaluate derivatives of polar equations and use integrals to find arc lengths and areas of polar curves.
5. Understand the difference between convergent and divergent sequences and series and apply appropriate tests to determine convergence.
6. Represent and approximate functions using Taylor polynomials and series and determine the

accuracy of such approximations by analyzing the remainder.

7. Apply a variety of techniques to solve differential equations, including separation of variables, Euler's method and logistic growth models.
8. Apply advanced calculus skills to model real-life situations with a function, a differential equation, or an integral and to solve corresponding applied problems.

Course Title: STATISTICS/FINANCE #1363

Suggested Grade Level: 12

Prerequisites: *Academic Algebra II*

The statistics topics in this course will help students prepare for post-secondary majors that use statistics, such as psychology, business, health science, sociology, history, education, science, pre-law, and engineering. Students will analyze data using the TI-83 graphing calculator. The concepts studied include: organizing and exploring data, correlation and regression, sampling and experiments, and probability. Finance is intended for students who have an interest in developing real-world personal finance skills before graduation. The course covers everyday financial concepts and promotes the importance of building a sound financial foundation. Students will learn about topics such as money management, borrowing, earning power, investing, financial services, and insurance. *Students may take this class concurrently with Pre-Calculus.*

Learning Goals Associated with the Course:

1. Distinguish between categorical and quantitative variables and use appropriate methods to display and describe these types of data.
2. Model distributions of data with density curves and understand the concept of standardizing values within a normal distribution to calculate z-scores and percentiles.
3. Analyze scatter plots and residual plots to describe relationship and correlation between two variables, and use the least squares regression line to assess fit and predict future values.
4. Identify and explain different methods of sampling and surveys and evaluate strengths and weaknesses of various experimental designs.
5. Calculate and interpret probabilities using distributions of discrete, continuous, independent, binomial, and geometric random variables.
6. Describe sampling distributions by including measures of shape, center, and spread for sample proportions and sample means.
7. Learn important real-world financial concepts.
8. Develop financial skills.
9. Demonstrate financial competence.
10. Understand the importance of financial literacy.

Course Title: AP STATISTICS #1362

Suggested Grade Level: 11-12

Prerequisites: *Pre-Calculus*

[Course Syllabus](#)

This course is intended for students who wish to move beyond the topics covered in Statistics, described above. A supplementary text is assigned, as the course features more rigorous problems and additional topics. Students may take this class concurrently with Pre-Calculus with math teacher recommendation. Students are prepared for the AP Statistics Examination, which may enable them to earn college credit. *This*

course requires summer work.

Learning Goals Associated with the Course:

1. Distinguish between categorical and quantitative variables and use appropriate methods to display and describe these types of data.
2. Model distributions of data with density curves and understand the concept of standardizing values within a normal distribution to calculate z-scores and percentiles.
3. Analyze scatter plots and residual plots to describe relationship and correlation between two variables, and use the least squares regression line to assess fit and predict future values.
4. Identify and explain different methods of sampling and surveys and evaluate strengths and weaknesses of various experimental designs.
5. Apply probability rules and use diagrams to calculate and interpret complementary, mutually exclusive, independent and conditional probabilities.
6. Calculate and interpret probabilities using distributions of discrete, continuous, independent, binomial and geometric random variables.
7. Describe sampling distributions by including measures of shape, center, and spread for sample proportions and sample means.
8. Apply techniques of confidence intervals and hypothesis testing to draw and communicate conclusions regarding population proportions and population means.
9. Analyze and interpret significance test results to determine statistical significance of population proportions and means
10. Compare two population proportions or means using tests of significance or confidence intervals.
11. Perform and interpret conclusions from the Chi-squared tests for goodness of fit, homogeneity and independence to make inference for distributions of categorical data.
12. Model nonlinear data using transformations to achieve linearity and conduct inference on the resulting linear regression models.

MATH ELECTIVE COURSES

*Elective courses do **not** satisfy mathematics credit requirements.*

Course Title: INTRODUCTION TO CODING #1370s

Suggested Grade Level: 9-12

Prerequisites: *none*

[Course Syllabus](#)

This semester course is designed as an introduction to the coding experience. No prior computer programming experience is needed. In this course students will create programs to solve problems and

develop interactive games or stories that they can share. Fundamental coding concepts such as loops and function parameters will be explored. Upon completion of this course, interested students may take Computer Science I.

Learning Goals Associated with the Course:

1. Develop programming algorithms to solve problems.
2. Apply standard functions in programs to solve problems.
3. Implement functions with parameters in programs to solve problems.
4. Write conditional statements to develop parameters to solve problems.
5. Utilize *while* loops in programs to make for more efficient code.
6. Implement nested loops in code to solve problems.
7. Apply appropriate debugging methods to solve program issues.
8. Utilize *for* loops in programs to make for more efficient code.

Course Title: COMPUTER SCIENCE #1371

Suggested Grade Level: 9-12

Prerequisites: *Algebra I*

[Course Syllabus](#)

Designed to help students experience sound techniques of problem-solving through the use of the computer, this course is an introduction to programming in Java. Computer Science is a heavily lab- oriented, hands-on class where students are encouraged to develop their own problem-solving strategies. Students will solve problems involving business, science, mathematics, manufacturing, and construction. The course stresses the construction of software that is both user-friendly as well as well-documented.

Learning Goals Associated with the Course:

1. Understand the basic structure of computer hardware and software along with machine code (binary number systems), assembly language and higher level programming languages.
2. Utilize established GUI dialog box interfaces to develop user friendly programs.
3. Utilize GUI interfaces to create graphic content.
4. Define variables and write algebraic formulas and expressions in Java.
5. Understand the fundamentals of classes and object oriented programming.
6. Write conditional statements and establish looping sequences in Java.
7. Apply the structure of the JPanel class inheritance and interface structures to solve problems.
8. Utilize GUI interface to explore recursive fractal mathematics.
9. Utilize arrays and array lists to organize variable data.
10. Utilize program structures to interact with data files and databases.

Course Title: AP COMPUTER SCIENCE #1372

Suggested Grade Level: 10-12

Prerequisites: *Computer Science or permission of instructor*

[Course Syllabus](#)

This is both a course for potential computer science majors and a foundation course for students planning to study in other technical fields such as engineering, physics, chemistry, and geology. The course emphasizes programming methodology and problem-solving through hands-on lab experiences. Students are prepared for the Advanced Placement Computer Science A exam, which may enable them to earn college credits.

Learning Goals Associated with the Course:

1. Understand the structure of computer hardware and software along with machine code (binary and hexadecimal number systems), assembly language and higher level programming languages, such as HTML, JAVA, C++, as well as ethical issues and social implications of computing systems.
2. Understand Primitive Types and Variable Declaration including the difference between variables declared as “int” or “double” and writing algebraic formulas and expressions in Java.
3. Understand and use Objects and apply method functions to the string class.
4. Understand Boolean expressions and write conditional statements.
5. Understand the concept of iterations and write efficient, user-friendly looping sequences in Java.
6. Understand the fundamentals of and develop customized classes in object oriented programming.
7. Utilize arrays and array lists to organize objects and variable data, along with using appropriate methods for searching and sorting arrays.
8. Recognize and use two-dimensional arrays to solve problems.
9. Apply the structure of class inheritance and interface structures to solve problems.
10. Utilize methods of recursion and merge sort to solve problems.

MUSIC

Academic Planning Notes:

- **All music courses address the Fine Arts credit requirement.**
- All music courses, except Jazz Band, Guitar, and Songwriting carry 1 Credit
- Advanced credit for the music department’s band and chorus courses is available providing the student meets certain requirements. Interested students should see the department head for details.

Course Title: CONCERT BAND #2210

Suggested Grade Level: 9-10

Prerequisites: *demonstrates proficiency on an instrument*

[Course Syllabus](#)

In this course students will perform and learn about a variety of pieces from the concert band repertoire. Throughout the year students will perform in a variety of settings including school concerts, festivals and

pep band games. In the Spring the band also marches in the Memorial Day parade. In order to be in the band, a student must demonstrate a proficiency level that shows the student can be a contributing band member.

Learning Goals Associated with the Course:

1. Students will demonstrate how understanding the style, genre, and context of a varied repertoire of music informs prepared performances as well as performers' technical skill to connect with the audience.
2. Students will develop, apply, and refine appropriate rehearsal strategies to address individual and ensemble challenges in a varied repertoire of music.
3. Students will demonstrate an understanding and mastery of the technical demands and expressive qualities of the music through prepared performances of a varied repertoire representing diverse cultures, styles, genres, and historical periods.
4. Students will justify interpretations of the expressive intent and meaning of musical works by comparing and synthesizing varied researched sources, including reference to other art forms

Course Title: JAZZ BAND #2212

Suggested Grade Level: 9-12

Prerequisites: *must be a member of Concert Band or Wind Ensemble and be selected by the instructor*

The course is an opportunity for instrumental musicians to explore and perform traditional big band jazz charts. There will be opportunities for students to learn improvisation. The group rehearses 3-4 hours a week after school, schedule to be determined. This group performs at school concerts, festivals and other functions throughout the year. This is a half credit course. Attendance at rehearsals and performances is mandatory.

Learning Goals Associated with the Course:

1. Students will demonstrate how understanding the style, genre, and context of a varied repertoire of music informs prepared performances as well as performers' technical skill to connect with the audience.
2. Students will develop, apply, and refine appropriate rehearsal strategies to address individual and ensemble challenges in a varied repertoire of music.
3. Students will demonstrate an understanding and mastery of the technical demands and expressive qualities of the music through prepared performances of a varied repertoire representing diverse cultures, styles, genres, and historical periods.
4. Students will justify interpretations of the expressive intent and meaning of musical works by comparing and synthesizing varied researched sources, including reference to other art forms.

Course Title: WIND ENSEMBLE #2211

Suggested Grade Level: 11-12

Prerequisites: *audition*

[Course Syllabus](#)

In this course students will perform and learn about a variety of pieces from the concert band repertoire, playing more advanced music and going into more detail than the concert band. Throughout the year students will perform in a variety of settings including school concerts, festivals, competitions and pep band games. In the Spring the band also marches in the Memorial Day parade. Students must audition in order to be eligible for this group.

Learning Goals Associated with the Course:

1. Students will demonstrate how understanding the style, genre, and context of a varied repertoire of music informs prepared performances as well as performers' technical skill to connect with the audience.

2. Students will develop, apply, and refine appropriate rehearsal strategies to address individual and ensemble challenges in a varied repertoire of music.
3. Students will demonstrate an understanding and mastery of the technical demands and expressive qualities of the music through prepared performances of a varied repertoire representing diverse cultures, styles, genres, and historical periods.
4. Students will justify interpretations of the expressive intent and meaning of musical works by comparing and synthesizing varied researched sources, including reference to other art forms

Course Title: CONCERT CHOIR #2221

Suggested Grade Level: 9-12

Prerequisites: *none*

[Course Syllabus](#)

In this course, students perform standard choral literature, ranging in difficulty from grade III to grade V. Proper vocal technique and ensemble singing is stressed. The Concert Choir performs at school concerts and festivals. Students need not audition to enter this group but must maintain a level of proficiency that enables the student to be a contributing member of the ensemble.

Learning Goals Associated with the Course:

1. Students will demonstrate how understanding the style, genre, and context of a varied repertoire of music informs prepared performances as well as performers' technical skill to connect with the audience.
2. Students will develop, apply, and refine appropriate rehearsal strategies to address individual and ensemble challenges in a varied repertoire of music.
3. Students will demonstrate an understanding and mastery of the technical demands and expressive qualities of the music through prepared performances of a varied repertoire representing diverse cultures, styles, genres, and historical periods.
4. Students will justify interpretations of the expressive intent and meaning of musical works by comparing and synthesizing varied researched sources, including reference to other art forms

Course Title: CHAMBER SINGERS #2222

Suggested Grade Level: 11-12

Prerequisites: *audition*

This course is offered to instruct singers, both male and female, who wish to explore more difficult choral literature for smaller groups. Music literacy instruction is offered to all members of the group. The ensemble has an extensive performance schedule at school concerts and festivals, both in state and regionally.

Learning Goals Associated with the Course:

1. Students will demonstrate how understanding the style, genre, and context of a varied repertoire of music informs prepared performances as well as performers' technical skill to connect with the audience.
2. Students will develop, apply, and refine appropriate rehearsal strategies to address individual and ensemble challenges in a varied repertoire of music.
3. Students will demonstrate an understanding and mastery of the technical demands and expressive qualities of the music through prepared performances of a varied repertoire representing diverse cultures, styles, genres, and historical periods.
4. Students will justify interpretations of the expressive intent and meaning of musical works by comparing and synthesizing varied researched sources, including reference to other art forms

Course Title: TREBLE CHOIR #2223

Suggested Grade Level: 10-12

Prerequisites: *audition*

[Course Syllabus](#)

This course is offered to female singers who wish to explore advanced treble (upper) voice choral literature. Music literacy instruction is offered to all members of the group. The ensemble has an extensive performance schedule at school concerts and festivals, both in state and regionally.

Learning Goals Associated with the Course:

1. Students will demonstrate how understanding the style, genre, and context of a varied repertoire of music informs prepared performances as well as performers' technical skill to connect with the audience.
2. Students will develop, apply, and refine appropriate rehearsal strategies to address individual and ensemble challenges in a varied repertoire of music.
3. Students will demonstrate an understanding and mastery of the technical demands and expressive qualities of the music through prepared performances of a varied repertoire representing diverse cultures, styles, genres, and historical periods.
4. Students will justify interpretations of the expressive intent and meaning of musical works by comparing and synthesizing varied researched sources, including reference to other art forms

Course Title: BEGINNING GUITAR #2213s

Suggested Grade Level: 9-12

Prerequisites: *none*

[Course Syllabus](#)

This course is designed for the absolute beginning guitar student (no experience necessary) or someone who may wish to become proficient in any of the course learning goals. Students are welcome to use their own guitar (classical with nylon strings preferred) or they may use a school guitar for the duration of the course on a first come basis. This class does not perform any public concerts.

This is a half year course for 0.5 Music/Performing Arts credit

Learning Goals Associated with the Course:

1. Students will learn to properly maintain and care for a guitar.
2. Students will play melodies and chords in a variety of styles.
3. Students will learn to read sheet music, tablature and chord symbols.
4. Students will gain experience playing as both a soloist and member of an ensemble.

Course Title: GUITAR II #2214s

Suggested Grade Level: 9-12

Prerequisites: *Beginning Guitar or permission of the instructor*

This course is designed for the advanced beginning to intermediate guitar student or someone who may wish to become proficient in any of the course learning goals. This course is driven by the specific interest of the students, where they have the opportunity to pursue learning styles and genres of music of their choosing. Students are welcome to use their own guitar (classical with nylon strings preferred) or they may use a school guitar for the duration of the course on a first come basis. This class does not perform any public concerts.

This is a half year course for 0.5 Music/Performing Arts credit

Learning Goals Associated with the Course:

1. Students will learn to properly maintain and care for a guitar.
2. Students will play melodies and chords in a variety of styles.
3. Students will learn to read sheet music, tablature and chord symbols.
4. Students will gain experience playing as both a soloist and member of an ensemble.

Course Title: SONGWRITING #2232s

Suggested Grade Level: 9-12

Prerequisites: *none*

The Songwriting course is designed for students interested in exploring writing their own songs. This course will explore lyric writing along with the basics of melody, harmony, bass and beats composition. Students will learn modern music industry practices along with how to use a digital audio workstation. Public performances are not required but opportunities will be available.

This is a half year course for 0.5 Music/Performing Arts credit

Learning Goals Associated with the Course:

1. Students will compose original music in modern styles.
2. Students will learn song form and structure.
3. Students will learn how to compose basic harmonic and rhythmic progressions.
4. Students will learn lyric writing and melody.
5. Students will learn how to use a digital audio station to create and edit music.

PHYSICAL EDUCATION

Academic Planning Notes:

- Physical Education credit required: 1
- Required courses: **PE I and PE II or OUTDOOR EDUCATION**
- Electives do not satisfy the state physical education requirement.

Course Title: PHYSICAL EDUCATION I #3210s

Suggested Grade Level: 9

Prerequisites: *none*

[Course Syllabus](#)

This course introduces students to the foundations of physical conditioning and personal wellness and teaches them how to assess their strength, flexibility, muscular endurance, and cardiovascular fitness. Students must complete specific common assessments that demonstrate achievement of the State Learning Standards in physical education. Students also participate in various types of fitness and individual lifetime activities.

Learning Goals Associated with the Course:

1. Demonstrate understanding of the five health related fitness components and the principles of training (specificity, overload, and progression).
2. Participate in a health-related fitness assessment to establish personal fitness goals and reassess their fitness over time. Assessed during Fitness Pre and Post Tests as well as individualized fitness program designs.
3. Design and critique a personal fitness plan, from established goals, that applies the principles of training.
4. Select and participate in physical activities that address their personal fitness plans and apply the five health-related fitness components.
5. Demonstrate responsible and ethical personal behavior while participating in physical activities.
6. Demonstrate collaborative skills while participating in physical activities.

Course Title: PHYSICAL EDUCATION II #3220s

Suggested Grade Level: 10-12

Prerequisites: *Physical Education I*

[Course Syllabus](#)

Students are introduced to and select from a variety of recreational and lifetime activities to fulfill Maine's PE requirement. In this course, students have the opportunity to explore and participate in activities that are designed to enhance personal fitness and cognitive, social, and psychomotor skills. Students in this course must also complete specific common assessments that demonstrate their achievement of the State Learning Standards in physical education.

Learning Goals Associated with the Course:

1. Explain the relationship of fitness skill components to specialized movement skills.
2. Demonstrate a variety of specialized movement skills specific to game/physical activity while participating in that game/physical activity.
3. Demonstrate responsible and ethical personal behavior while participating in physical activities.

Course Title: OUTDOOR EDUCATION #3221s

Suggested Grade Level: 10-12

Prerequisites: *Physical Education I*

[Course Syllabus](#)

NOTE: Students may take and complete this course instead of PE II in order to earn required credit

This course provides students with an alternative way to fulfill Maine's PE requirement or may be taken as an elective. Coursework introduces students to lifelong activities in an outdoor setting. Activities may include biking, cross country skiing, snowshoeing, archery, outdoor safety tips, shelter building, and disc golf.

Learning Goals Associated with the Course:

1. Demonstrate a variety of specialized movement skills specific to game/physical activity while participating in that game/physical activity.
2. Demonstrate responsible and ethical personal behavior while participating in physical activities.

PHYSICAL EDUCATION ELECTIVES

NOTE: These courses do NOT address Maine's physical education requirement.

Course Title: RESISTANCE TRAINING #3233s

Suggested Grade Level: 11-12

Prerequisites: *Successful completion of PE I and PE II or Outdoor Education*

This course gives students the opportunity to improve fitness and exercise levels within the field of weight training. The focus of this course is the proper use of resistance training to increase strength and flexibility to promote a healthy body.

Learning Goals Associated with the Course:

1. Demonstrate understanding of the five health related fitness components and the principles of training (specificity, overload, and progression)
2. Design and critique a personal fitness plan, from established goals, that applies the principles of training.
3. Participate in a health-related fitness assessment to establish personal fitness goals and reassess their fitness over time. Assessed during Fitness Pre and Post Tests as well as individualized fitness program designs.

Course Title: TEAM SPORTS #3234s

Suggested Grade Level: 11-12

Prerequisites: *Successful completion of PE I and PE II or Outdoor Education*

This course is designed for the student who enjoys participating in a sports environment and is willing to work cooperatively with classmates. Students learn how to strategize, develop team concepts, exhibit proper sportsmanship, and experience a team atmosphere. Activities may include basketball, soccer, ultimate frisbee, or others chosen by individual class sections.

Learning Goals Associated with the Course:

1. Demonstrate a variety of specialized movement skills specific to game/physical activity while participating in that game/physical activity.
2. Demonstrate responsible and ethical personal behavior while participating in physical activities.

Course Title: FIT FOR LIFE #3231s

Suggested Grade Level: 10-12

Prerequisites: *Successful completion of PE I and PE II or Outdoor Education*

Are you looking to make some changes in your life? Maybe you want to be in better shape or learn how to eat healthier. The focus of this semester-long class is to develop an appreciation for a healthy lifestyle that promotes good overall health and habits to be "Fit for Life".

Learning Goals Associated with the Course:

1. Predict how behaviors impact health status by analyzing individual responsibility for one's health, barriers to healthy behaviors, personal susceptibility and potential severity of injury and illness when practicing unhealthy behaviors.
2. Analyze the interrelationships of physical, mental, intellectual, emotional and social health.
3. Utilize effective communication skills with family, peers and others to enhance health in the following ways: asking for and offering assistance to enhance the health of self and others; refusal; negotiation and collaboration skills to avoid and reduce health risks; and strategies for prevention, management and resolution of interpersonal conflicts without harm to self or others.
4. Analyze and describe how the environment, genetics, family history, are interrelated and can impact personal health.
5. Demonstrate responsible and ethical personal behavior while participating in physical activities.

SCIENCE

Academic Planning Notes:

Students and parents should be aware of the following when selecting science courses:

* **At least three (3)** science credits are **required** to graduate.

* Educational experiences are **required** in Science I, II, III, and IV (Physical Science, Biology, Chemistry, and Physics). To meet these requirements, a student **must complete one of the following core curriculum sequences**:

A. Four-course sequence (recommended in preparation for post-secondary education):

<u>Grade</u>	<u>Course</u>
9	Science I (Physical Science, Academic Physical Science, or Advanced Physical Science)
10	Science II (Biology, Academic Biology, or Advanced Biology)
11	Science III (Chemistry, Academic Chemistry, or Advanced Chemistry)
12	Science IV (Physics, Academic Physics, or Advanced Physics)

B. Three-course sequence (not recommended if likely to pursue post-secondary education):

<u>Grade</u>	<u>Course</u>
9	Science I (Physical Science)
10	Science II (Biology or Academic Biology)
11 or 12	Science III/IV Combined (Chemistry/Physics)

The decision to select the three-course sequence **must be made prior to beginning 11th grade**.

* Elective courses may be taken in addition to, **though not in replacement of**, those from the selected core curriculum sequence.

* All levels of the Physical Science, Biology, Chemistry, and Physics courses have a laboratory component. Many competitive post-secondary institutions **suggest** taking yet another advanced level laboratory science course.

* Students who wish to enroll in advanced placement or honors level courses must complete a screening process in the second half of the preceding school year. Screening test dates will be communicated via school wide announcements.

* Three and four year Region 10 Technical High School students have modified graduation requirements. Guidance counselors will assist students in scheduling a modified course sequence to be completed in conjunction with the Region 10 Technical High School program.

Guidelines to address course failures:

* Students who do not pass Science I must retake a Physical Science course. They may enroll at the same time

as Science II with administrative permission.

* Students who do not pass Science II must retake a Biology course. They may enroll at the same time as Science III with administrative permission.

* Students who do not pass Science III should enroll in Chemistry/Physics to complete their third science credit.

SCIENCE I COURSES

Course Title: PHYSICAL SCIENCE #1410

Suggested Grade Level: 9

Prerequisites: *Middle School Science*

[Course Syllabus](#)

This course is designed for students who plan to further their education beyond high school, and who may need a more supportive setting as they work to master scientific and mathematical concepts. There is a laboratory component to the course, though it may be limited in scope as compared to the Academic Physical Science course. Lessons are structured to help students gain an understanding of content through experimentation and data analysis. There is a focus on the development of scientific skills, practices, and habits of mind. Topics include: scientific practices, measurement, the Solar System, the Universe, matter, Earth's interior, Earth's atmosphere and hydrosphere, climate change, and human impacts on Earth's systems. There is an emphasis on the physical aspects of these systems. Students are expected to maintain a science notebook and complete daily assignments.

Learning Goals Associated with the Course:

Students will be able to:

1. Ask questions and define problems
2. Plan and carry out investigations
3. Analyze and interpret data
4. Use mathematics and computational thinking
5. Obtain, evaluate, and communicate information

Students will demonstrate an understanding of:

1. The Solar System
 - a. Gravity as an attractive force influenced by the mass of objects and the distance between them
 - b. The orbital features of objects in the solar system
2. The Universe
 - a. The life of the Sun
 - b. The role of nuclear fusion in the Sun's core to release energy that eventually reaches Earth in the form of radiation
 - c. The production of elements in stars over their life cycles
3. Earth's Interior
 - a. The structure and composition of Earth's interior
 - b. The techniques used by scientists to investigate and understand Earth's interior
 - c. The cycling of matter within Earth's interior
4. Earth's Atmosphere and Hydrosphere
 - a. Variations in the flow of energy into and out of Earth's systems result in changes in climate
 - b. The cycling of carbon among Earth's hydrosphere, atmosphere, geosphere, and biosphere.

5. Climate Change
 - a. The factors influencing global and/or regional climate change and their associated rates
 - b. The variables that are important to monitoring and predicting global climate change
 - c. The potential impacts of natural events and hazards on global climate
 - d. The effects of natural resource availability and natural hazards on human behaviors
6. Human Impacts on Earth's Systems
 - a. The costs, risks, and benefits of resource extraction and energy production
 - b. Systems engineered by humans to produce and utilize energy
 - c. Relationships among Earth's systems and how those systems and relationships are being affected by human behaviors
 - d. Ways in which human activities can be modified to lessen their impacts on Earth's systems

Course Title: ACADEMIC PHYSICAL SCIENCE #1411

Suggested Grade Level: 9

Prerequisites: *Middle School Science*

[Course Syllabus](#)

This rigorous course provides students with an opportunity for a laboratory science experience in the first year of high school. Lessons are structured to help students gain a deep understanding of content through experimentation and data analysis. There is a focus on developing critical scientific skills, practices, and habits of mind. Topics include: scientific methods, chemistry of the universe, classification and interactions of matter, Earth cycles and systems, energy, and human activity and the environment. Students are expected to maintain a science notebook and complete daily assignments.

Learning Goals Associated with the Course:

Students will be able to:

1. Ask questions and define problems
2. Plan and carry out investigations
3. Analyze and interpret data
4. Use mathematics and computational thinking
5. Obtain, evaluate, and communicate information

Students will demonstrate an understanding of:

1. The Solar System
 - a. Gravity as an attractive force influenced by the mass of objects and the distance between them
 - b. The orbital features of objects in the solar system
2. The Universe
 - a. The life of the Sun
 - b. The role of nuclear fusion in the Sun's core to release energy that eventually reaches Earth in the form of radiation
 - c. The production of elements in stars over their life cycles
3. Earth's Interior
 - a. The structure and composition of Earth's interior
 - b. The techniques used by scientists to investigate and understand Earth's interior
 - c. The cycling of matter within Earth's interior
4. Earth's Atmosphere and Hydrosphere
 - a. Variations in the flow of energy into and out of Earth's systems result in changes in climate
 - b. The cycling of carbon among Earth's hydrosphere, atmosphere, geosphere, and biosphere.
5. Climate Change
 - a. The factors influencing global and/or regional climate change and their associated rates

- b. The variables that are important to monitoring and predicting global climate change
 - c. The potential impacts of natural events and hazards on global climate
 - d. The effects of natural resource availability and natural hazards on human behaviors
6. Human Impacts on Earth's Systems
- a. The costs, risks, and benefits of resource extraction and energy production
 - b. Systems engineered by humans to produce and utilize energy
 - c. Relationships among Earth's systems and how those systems and relationships are being affected by human behaviors
 - d. Ways in which human activities can be modified to lessen their impacts on Earth's systems

Course Title: ADVANCED PHYSICAL SCIENCE #1412

Suggested Grade Level: 9

Prerequisites: *Middle School Science; Advanced Algebra I; department screening including successful completion of summer work*

[Course Syllabus](#)

This level of physical science is more demanding than Academic Physical Science. The course provides students with an opportunity for a lab science class in their first year of high school. Lessons are structured to help students gain a deep understanding of content through experimentation and data analysis. There is a focus on developing critical scientific skills, practices, and habits of mind. Topics include: scientific methods, chemistry of the universe, classification and interactions of matter, Earth cycles and systems, energy, and human activity and the environment. Students are expected to maintain a science notebook and complete daily assignments. Students must complete the department screening process and the required summer work.

Learning Goals Associated with the Course:

Students will be able to:

1. Ask questions and define problems
2. Plan and carry out investigations
3. Analyze and interpret data
4. Use mathematics and computational thinking
5. Obtain, evaluate, and communicate information

Students will demonstrate an understanding of:

1. The Solar System
 - a. Gravity as an attractive force influenced by the mass of objects and the distance between them
 - b. The orbital features of objects in the solar system
2. The Universe
 - a. The life of the Sun
 - b. The role of nuclear fusion in the Sun's core to release energy that eventually reaches Earth in the form of radiation
 - c. The production of elements in stars over their life cycles
3. Earth's Interior
 - a. The structure and composition of Earth's interior
 - b. The techniques used by scientists to investigate and understand Earth's interior
 - c. The cycling of matter within Earth's interior
4. Earth's Atmosphere and Hydrosphere
 - a. Variations in the flow of energy into and out of Earth's systems result in changes in climate
 - b. The cycling of carbon among Earth's hydrosphere, atmosphere, geosphere, and biosphere.
5. Climate Change

- a. The factors influencing global and/or regional climate change and their associated rates
 - b. The variables that are important to monitoring and predicting global climate change
 - c. The potential impacts of natural events and hazards on global climate
 - d. The effects of natural resource availability and natural hazards on human behaviors
6. Human Impacts on Earth's Systems
- a. The costs, risks, and benefits of resource extraction and energy production
 - b. Systems engineered by humans to produce and utilize energy
 - c. Relationships among Earth's systems and how those systems and relationships are being affected by human behaviors
 - d. Ways in which human activities can be modified to lessen their impacts on Earth's systems

SCIENCE II COURSES

Course Title: BIOLOGY #1420

Suggested Grade Level: 10

Prerequisites: *Science I*

[Course Syllabus](#)

This course is designed for students who plan to further their education beyond high school, and who may need a more supportive setting as they work to master scientific and mathematical concepts. It is designed to provide a fundamental understanding of the principles of biology. Topics include: molecular biology, ecology, cells, heredity and reproduction, and evolution. The course takes a more descriptive and conceptual approach to topics, though experimentation and data analysis are incorporated into many lessons. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. Students are encouraged to assume more independent roles and responsibilities in the learning process. Students are expected to maintain a science notebook and complete daily assignments. Projects involving research and presentations are also required.

Learning Goals Associated with the Course:

1. Life Characteristics: Demonstrates an understanding of the characteristics of life
 - a. Organization: Demonstrates an understanding of the role of hierarchical structural organization in multicellular organisms
 - b. Homeostasis: Demonstrates an understanding of the role of feedback mechanisms and homeostasis in living organisms
2. Natural Selection and Evolution
 - a. Natural Selection: Demonstrates an understanding of natural selection and the adaptation of populations of organisms
 - b. Evidence of Evolution: Demonstrates an understanding that common ancestry and biological evolution are supported by multiple lines of empirical evidence
3. Ecology/Environment
 - a. Cycling of Matter & Energy Flow: Demonstrates an understanding of the cycling of matter and flow of energy among organisms in ecosystems
 - b. Carbon Cycle: Demonstrates an understanding of the role of photosynthesis and cellular respiration in the cycling of carbon between the biosphere, atmosphere, oceans, and geosphere
 - c. Carrying Capacity: Demonstrates an understanding of factors that affect carrying capacity of ecosystems at different scales
 - d. Stability of Ecosystems: Demonstrates an understanding of the stability of organisms in ecosystems

4. Cellular & Molecular Biology
 - a. Cell Division & Differentiation: Demonstrates an understanding of the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms
 - b. Molecules of Life: Demonstrates an understanding of the role that carbon, hydrogen, and oxygen in sugar molecules play in forming the basic molecules of living systems
 - c. Photosynthesis: Demonstrates an understanding of how photosynthesis transforms light energy into stored chemical energy
 - d. Cellular Respiration: Demonstrates an understanding of cellular respiration and its implications in living systems
5. Genetics and Inheritance, DNA & Protein
 - a. Variation: Demonstrates an understanding of the variables (meiosis, Mendelian genetics, environmental influences) affecting inheritable genetic variations that can lead to understanding variation and distribution of expressed traits in a population
 - b. Inheritance of Traits: Demonstrates an understanding of the role of chromosomal DNA in coding the instructions for characteristics traits passed from parents to offspring
 - c. DNA & Protein: Demonstrates an understanding of the role of DNA & protein, such as enzymes, in life's functions

Course Title: ACADEMIC BIOLOGY #1421

Suggested Grade Level: 10

Prerequisites: *Science I*

This rigorous course addresses the following topics: molecular biology, ecology, cells, heredity and reproduction, and evolution. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. There are strong expectations concerning the roles and responsibilities of students in the learning process. Strong work ethic and writing proficiency are essential for student success. Frequent lab exercises, independent projects with oral presentations, readings, homework, library research, and Internet research are required.

Learning Goals Associated with the Course:

1. Life Characteristics: Demonstrates an understanding of the characteristics of life
 - a. Organization: Demonstrates an understanding of the role of hierarchical structural organization in multicellular organisms
 - b. Homeostasis: Demonstrates an understanding of the role of feedback mechanisms and homeostasis in living organisms
2. Natural Selection and Evolution
 - a. Natural Selection: Demonstrates an understanding of natural selection and the adaptation of populations of organisms
 - b. Evidence of Evolution: Demonstrates an understanding that common ancestry and biological evolution are supported by multiple lines of empirical evidence
3. Ecology/Environment
 - a. Cycling of Matter & Energy Flow: Demonstrates an understanding of the cycling of matter and flow of energy among organisms in ecosystems
 - b. Carbon Cycle: Demonstrates an understanding of the role of photosynthesis and cellular respiration in the cycling of carbon between the biosphere, atmosphere, oceans, and geosphere
 - c. Carrying Capacity: Demonstrates an understanding of factors that affect carrying capacity of ecosystems at different scales
 - d. Stability of Ecosystems: Demonstrates an understanding of the stability of organisms in ecosystems
4. Cellular & Molecular Biology

- a. Cell Division & Differentiation: Demonstrates an understanding of the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms
 - b. Molecules of Life: Demonstrates an understanding of the role that carbon, hydrogen, and oxygen in sugar molecules play in forming the basic molecules of living systems
 - c. Photosynthesis: Demonstrates an understanding of how photosynthesis transforms light energy into stored chemical energy
 - d. Cellular Respiration: Demonstrates an understanding of cellular respiration and its implications in living systems
5. Genetics and Inheritance, DNA & Protein
- a. Variation: Demonstrates an understanding of the variables (meiosis, Mendelian genetics, environmental influences) affecting inheritable genetic variations that can lead to understanding variation and distribution of expressed traits in a population
 - b. Inheritance of Traits: Demonstrates an understanding of the role of chromosomal DNA in coding the instructions for characteristic traits passed from parents to offspring
 - c. DNA & Protein: Demonstrates an understanding of the role of DNA & protein, such as enzymes, in life's functions

Course Title: ADVANCED BIOLOGY #1422

Suggested Grade Level: 10

Prerequisites: *Science I, Algebra I; department screening including successful completion of summer work*
[Course Syllabus](#)

This level of biology is more demanding than Academic Biology. Topics include: molecular biology, ecology, cells, heredity and reproduction, and evolution. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. As compared to Academic Biology, there is an even greater expectation concerning the responsibility of the student in the learning process. Very strong work ethic and writing proficiency are essential for student success. Frequent lab exercises, independent projects with oral presentations, readings, and homework will be part of the course expectations. Students are expected to conduct a research project, complete extra readings, and keep an ecology journal. Students must complete the department screening process and the required summer work.

Learning Goals Associated with the Course:

1. Life Characteristics: Demonstrates an understanding of the characteristics of life
 - a. Organization: Demonstrates an understanding of the role of hierarchical structural organization in multicellular organisms
 - b. Homeostasis: Demonstrates an understanding of the role of feedback mechanisms and homeostasis in living organisms
2. Natural Selection and Evolution
 - a. Natural Selection: Demonstrates an understanding of natural selection and the adaptation of populations of organisms
 - b. Evidence of Evolution: Demonstrates an understanding that common ancestry and biological evolution are supported by multiple lines of empirical evidence
3. Ecology/Environment
 - a. Cycling of Matter & Energy Flow: Demonstrates an understanding of the cycling of matter and flow of energy among organisms in ecosystems
 - b. Carbon Cycle: Demonstrates an understanding of the role of photosynthesis and cellular respiration in the cycling of carbon between the biosphere, atmosphere, oceans, and geosphere
 - c. Carrying Capacity: Demonstrates an understanding of factors that affect carrying capacity of ecosystems at different scales

- d. Stability of Ecosystems: Demonstrates an understanding of the stability of organisms in ecosystems
- 4. Cellular & Molecular Biology
 - a. Cell Division & Differentiation: Demonstrates an understanding of the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms
 - b. Molecules of Life: Demonstrates an understanding of the role that carbon, hydrogen, and oxygen in sugar molecules play in forming the basic molecules of living systems
 - c. Photosynthesis: Demonstrates an understanding of how photosynthesis transforms light energy into stored chemical energy
 - d. Cellular Respiration: Demonstrates an understanding of cellular respiration and its implications in living systems
- 5. Genetics and Inheritance, DNA & Protein
 - a. Variation: Demonstrates an understanding of the variables (meiosis, Mendelian genetics, environmental influences) affecting inheritable genetic variations that can lead to understanding variation and distribution of expressed traits in a population
 - b. Inheritance of Traits: Demonstrates an understanding of the role of chromosomal DNA in coding the instructions for characteristics traits passed from parents to offspring
 - c. DNA & Protein: Demonstrates an understanding of the role of DNA & protein, such as enzymes, in life's functions

Course Title: ADVANCED BIOLOGY LAB #1422s

Suggested Grade Level: 10

Prerequisites: *Current enrollment in Honors Biology*

This lab will meet for an entire period during only the fall semester.

SCIENCE III COURSES

Course Title: CHEMISTRY #1430

Suggested Grade Level: 11

Prerequisites: *Science I, Science II, Algebra I*

[Course Syllabus](#)

This course is designed for students who plan to further their education beyond high school, and who may need a more supportive setting as they work to master scientific and mathematical concepts. It is designed to provide a fundamental understanding of the principles of chemistry. Topics include: nucleosynthesis, periodic table, atomic structure, chemical formulas, chemical bonding, chemical equations, matter, and energy. The course takes a more descriptive and conceptual approach to topics, though experimentation and data analysis are incorporated into many lessons. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. Students are encouraged to assume more independent roles and responsibilities in the learning process. Students are expected to maintain a science notebook and complete daily assignments.

Learning Goals Associated with the Course:

1. Properties of Elements: Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms
2. Chemical Reactions: Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties

3. Structure & Electrical Forces: Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles
4. Bond Energy: Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy
5. Rate of Reaction: Apply scientific principles and evidence to provide an explanation about the effect of changing the temperature and concentration of the reacting particles on the rate at which a reaction occurs
6. Chemical Reactions & Equilibrium: Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium
7. Conservation of Mass: Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction
8. Molecular-Level Structures: Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials
9. Second Law of Thermodynamics: Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperatures are combined within a closed system results in a more uniform energy distribution among components in the system (second law of thermodynamics)
10. Global Challenge: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants
11. Solutions to Complex Problems: Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering

Course Title: ACADEMIC CHEMISTRY #1431

Suggested Grade Level: 11

Prerequisites: *Science I, Science II, Algebra II (or concurrent enrollment)*

[Course Syllabus](#)

This rigorous course addresses the following topics: nucleosynthesis, periodic table, atomic structure, chemical formulas, chemical bonding, chemical equations, matter and energy, and climate change. It is structured similarly to a college course. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. There are strong expectations concerning the roles and responsibilities of students in the learning process. Math and writing proficiencies are essential for student success. Students are expected to maintain a science notebook and complete daily assignments.

Learning Goals Associated with the Course:

1. Properties of Elements: Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms
2. Chemical Reactions: Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties
3. Structure & Electrical Forces: Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles
4. Bond Energy: Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy
5. Rate of Reaction: Apply scientific principles and evidence to provide an explanation about the effect of changing the temperature and concentration of the reacting particles on the rate at which a reaction occurs
6. Chemical Reactions & Equilibrium: Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium
7. Conservation of Mass: Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction

8. Molecular-Level Structures: Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials
9. Second Law of Thermodynamics: Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperatures are combined within a closed system results in a more uniform energy distribution among components in the system (second law of thermodynamics)
10. Global Challenge: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants
11. Solutions to Complex Problems: Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering

Course Title: ADVANCED CHEMISTRY #1432

Suggested Grade Level: 11

Prerequisites: *Science I, Science II, Algebra II; department screening including successful completion of summer work*

[Course Syllabus](#)

This level of chemistry is more demanding than Academic Chemistry. Topics include: nucleosynthesis, periodic table, atomic structure, chemical formulas, chemical bonding, chemical equations, matter, and energy. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. As compared to Academic Chemistry, there is an even greater expectation concerning the responsibility of the student in the learning process. The approach of this course allows for a deeper exploration of topics, and requires very strong math skills along with the ability to independently design and conduct experiments. Students must complete the department screening process and the required summer work. Students are expected to maintain a science notebook and complete daily assignments.

Learning Goals Associated with the Course:

1. Properties of Elements: Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms
2. Chemical Reactions: Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties
3. Structure & Electrical Forces: Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles
4. Bond Energy: Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy
5. Rate of Reaction: Apply scientific principles and evidence to provide an explanation about the effect of changing the temperature and concentration of the reacting particles on the rate at which a reaction occurs
6. Chemical Reactions & Equilibrium: Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium
7. Conservation of Mass: Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction
8. Molecular-Level Structures: Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials
9. Second Law of Thermodynamics: Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperatures are combined within a closed system results in a more uniform energy distribution among components in the system (second law of thermodynamics)
10. Global Challenge: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants

11. Solutions to Complex Problems: Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering

Course Title: ADVANCED CHEMISTRY LAB #1432s

Suggested Grade Level: 11

Prerequisites: *current enrollment in Honors Chemistry*

This lab will meet for an entire period during only the fall semester.

SCIENCE IV COURSES

Course Title: PHYSICS #1440

Suggested Grade Level: 12

Prerequisites: *Science I, Science II, Science III, Algebra I*

[Course Syllabus](#)

This course is designed for students who plan to further their education beyond high school, and who may need a more supportive setting as they work to master scientific and mathematical concepts. Lessons are designed to help students improve their problem solving and mathematical skills. Topics include: motion, forces, two-dimensional interactions, gravitation, orbital motion, impulse and momentum, energy and work, conservation of energy, electricity, and magnetism. The course explores the nature of physics conceptually, mathematically, and experimentally. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. There are strong expectations concerning the roles and responsibilities of students in the learning process. Students are expected to maintain a science notebook and complete daily assignments.

Learning Goals Associated with the Course:

Students will be able to:

1. Ask questions and define problems
2. Develop and use models
3. Plan and carry out investigations
4. Analyze and interpret data
5. Use mathematics and computational thinking
6. Construct explanations and design solutions
7. Engage in argument from evidence
8. Obtain, evaluate, and communicate information

Students will demonstrate an understanding of:

1. Constant Velocity Motion
 - a. Systems and conventions used to describe and represent constant velocity motion
 - b. The motion of an object in one dimension with constant velocity
2. Uniformly Accelerated Motion
 - a. Systems and conventions used to describe and represent uniformly accelerated motion
 - b. The motion of an object in one dimension with uniform acceleration
 - c. The motion of an object experiencing uniform acceleration due to gravity only
3. Forces in One Dimension
 - a. Systems and conventions used to describe and represent forces acting upon an object
 - b. The behavior of objects of mass that are acted upon by a force or forces in one dimension
4. Forces in Two Dimensions

- a. Systems and conventions used to describe and represent forces acting upon an object in two dimensions
 - b. The behavior of objects of mass as a function of being acted upon by a force or forces in two dimensions
 - c. The behavior of objects of mass as a function of experiencing frictional forces
5. Motion in Two Dimensions
- a. The variables influencing the motion of objects while moving uniformly in a circle and experiencing a net inward force
 - b. The behavior of objects of mass that are moving uniformly in a circle and experiencing a net inward force
6. Orbital Motion and Universal Gravitation
- a. The variables influencing the motion of orbiting bodies
 - b. The behavior of orbiting bodies
 - c. The gravitational attraction between two objects as a function of the variables influencing that attraction
7. Impulse and Momentum
- a. The relationship between impulse and change in momentum
 - b. The behavior within a system of objects experiencing a change in momentum
8. Energy and Work
- a. Systems and conventions used to describe and represent energy
 - b. The relationship between energy and work
 - c. The behavior of objects as a function of energy being both a conserved and transferable quantity
9. Vibrations and Waves
- a. The variables influencing an object experiencing simple harmonic motion
 - b. The behavior of objects experiencing simple harmonic motion
 - c. The relationships between the frequency, wavelength, and speed of a wave
 - d. The behavior of waves traveling through various media
10. Electric Charges and Forces
- a. The relationship between charge and electrical force
 - b. The behavior of charged objects as a function of an imbalance in charge
 - c. The behavior of objects as a function of electric or magnetic fields
11. Applications of Electromagnetism
- a. The relationships between electric current and magnetic field
 - b. Applications of electromagnetism in society

Course Title: ACADEMIC PHYSICS #1441

Suggested Grade Level: 12

Prerequisites: *Science I, Science II, Science III, Algebra II*

[Course Syllabus](#)

This rigorous course addresses the following topics: motion, forces, two-dimensional interactions, gravitation, orbital motion, impulse and momentum, energy and work, conservation of energy, electricity, and magnetism. The course explores the nature of physics conceptually, mathematically, and experimentally. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. There are strong expectations concerning the roles and responsibilities of students in the learning process. Math and writing proficiencies are essential for student success. Students are expected to maintain a science notebook and complete daily assignments.

Learning Goals Associated with the Course:

Students will be able to:

1. Ask questions and define problems
2. Develop and use models
3. Plan and carry out investigations
4. Analyze and interpret data
5. Use mathematics and computational thinking
6. Construct explanations and design solutions
7. Engage in argument from evidence
8. Obtain, evaluate, and communicate information

Students will demonstrate an understanding of:

1. Constant Velocity Motion
 - a. Systems and conventions used to describe and represent constant velocity motion
 - b. The motion of an object in one dimension with constant velocity
2. Uniformly Accelerated Motion
 - a. Systems and conventions used to describe and represent uniformly accelerated motion
 - b. The motion of an object in one dimension with uniform acceleration
 - c. The motion of an object experiencing uniform acceleration due to gravity only
3. Forces in One Dimension
 - a. Systems and conventions used to describe and represent forces acting upon an object
 - b. The behavior of objects of mass that are acted upon by a force or forces in one dimension
4. Forces in Two Dimensions
 - a. Systems and conventions used to describe and represent forces acting upon an object in two dimensions
 - b. The behavior of objects of mass as a function of being acted upon by a force or forces in two dimensions
 - c. The behavior of objects of mass as a function of experiencing frictional forces
5. Motion in Two Dimensions
 - a. The variables influencing the motion of objects while moving uniformly in a circle and experiencing a net inward force
 - b. The behavior of objects of mass that are moving uniformly in a circle and experiencing a net inward force
6. Orbital Motion and Universal Gravitation
 - a. The variables influencing the motion of orbiting bodies
 - b. The behavior of orbiting bodies
 - c. The gravitational attraction between two objects as a function of the variables influencing that attraction
7. Impulse and Momentum
 - a. The relationship between impulse and change in momentum
 - b. The behavior within a system of objects experiencing a change in momentum
8. Energy and Work
 - a. Systems and conventions used to describe and represent energy
 - b. The relationship between energy and work
 - c. The behavior of objects as a function of energy being both a conserved and transferable quantity
9. Vibrations and Waves
 - a. The variables influencing an object experiencing simple harmonic motion
 - b. The behavior of objects experiencing simple harmonic motion
 - c. The relationships between the frequency, wavelength, and speed of a wave
 - d. The behavior of waves traveling through various media
10. Electric Charges and Forces
 - a. The relationship between charge and electrical force
 - b. The behavior of charged objects as a function of an imbalance in charge
 - c. The behavior of objects as a function of electric or magnetic fields

11. Applications of Electromagnetism
 - a. The relationships between electric current and magnetic field
 - b. Applications of electromagnetism in society

Course Title: ADVANCED PHYSICS #1442

Suggested Grade Level: 12

Prerequisites: *Science I, Science II, Science III, Advanced Algebra II; department screening including successful completion of summer work*

[Course Syllabus](#)

This level of physics is more demanding than Academic Physics. Topics include: motion, forces, two-dimensional interactions, gravitation, orbital motion, impulse and momentum, energy and work, conservation of energy, electricity, and magnetism. The course explores the nature of physics conceptually, mathematically, and experimentally. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. As compared to Academic Physics, there is an even greater expectation concerning the responsibility of the student in the learning process. The approach of this course allows for a deeper exploration of topics, and requires very strong math skills along with the ability to independently design and conduct experiments. Students must complete the department screening process and the required summer work. Students are expected to maintain a science notebook and complete daily assignments.

Learning Goals Associated with the Course:

Students will be able to:

1. Ask questions and define problems
2. Develop and use models
3. Plan and carry out investigations
4. Analyze and interpret data
5. Use mathematics and computational thinking
6. Construct explanations and design solutions
7. Engage in argument from evidence
8. Obtain, evaluate, and communicate information

Students will demonstrate an understanding of:

1. Constant Velocity Motion
 - a. Systems and conventions used to describe and represent constant velocity motion
 - b. The motion of an object in one dimension with constant velocity
2. Uniformly Accelerated Motion
 - a. Systems and conventions used to describe and represent uniformly accelerated motion
 - b. The motion of an object in one dimension with uniform acceleration
 - c. The motion of an object experiencing uniform acceleration due to gravity only
3. Forces in One Dimension
 - a. Systems and conventions used to describe and represent forces acting upon an object
 - b. The behavior of objects of mass that are acted upon by a force or forces in one dimension
4. Forces in Two Dimensions
 - a. Systems and conventions used to describe and represent forces acting upon an object in two dimensions
 - b. The behavior of objects of mass as a function of being acted upon by a force or forces in two dimensions
 - c. The behavior of objects of mass as a function of experiencing frictional forces
5. Motion in Two Dimensions

- a. The variables influencing the motion of objects while moving uniformly in a circle and experiencing a net inward force
- b. The behavior of objects of mass that are moving uniformly in a circle and experiencing a net inward force
- 6. Orbital Motion and Universal Gravitation
 - a. The variables influencing the motion of orbiting bodies
 - b. The behavior of orbiting bodies
 - c. The gravitational attraction between two objects as a function of the variables influencing that attraction
- 7. Impulse and Momentum
 - a. The relationship between impulse and change in momentum
 - b. The behavior within a system of objects experiencing a change in momentum
- 8. Energy and Work
 - a. Systems and conventions used to describe and represent energy
 - b. The relationship between energy and work
 - c. The behavior of objects as a function of energy being both a conserved and transferable quantity
- 9. Vibrations and Waves
 - a. The variables influencing an object experiencing simple harmonic motion
 - b. The behavior of objects experiencing simple harmonic motion
 - c. The relationships between the frequency, wavelength, and speed of a wave
 - d. The behavior of waves traveling through various media
- 10. Electric Charges and Forces
 - a. The relationship between charge and electrical force
 - b. The behavior of charged objects as a function of an imbalance in charge
 - c. The behavior of objects as a function of electric or magnetic fields
- 11. Applications of Electromagnetism
 - a. The relationships between electric current and magnetic field
 - b. Applications of electromagnetism in society

Course Title: ADVANCED PHYSICS LAB #1442s

Suggested Grade Level: 12

Prerequisites: *current enrollment in Honors Physics*

This lab will meet for half of a period all year long. Students can enroll in both Honors Physics and an Advanced Placement science course. If an Advanced Placement science course is not chosen, a half-period study hall will be assigned.

SCIENCE III/IV COMBINED COURSE

Students take the following course:

Course Title: CHEMISTRY/PHYSICS #1433

Suggested Grade Level: 11-12

Prerequisites: *Science I, Science II*

This full year course introduces students to fundamental concepts in chemistry and physics using an integrated approach that merges traditional content and topics with STEM related engineering practices. Traditional content and topics are investigated to establish a solid foundation, then these concepts are more deeply developed through the use of STEM focused projects that strive to engage students and introduce

them to current and real-world engineering methodologies. Major topics include scientific measurement and experimental design, kinematics and dynamics, states of matter, atomic structure, chemical bonding and reactions, and energy with emphasis on consideration of alternative energy sources.

Learning Goals Associated with the Course:

1. Properties of Elements: Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.
2. Chemical Reactions: Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.
3. Structure & Electrical Forces: Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.
4. Conservation of Mass: Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.
5. Force, Mass, & Acceleration: Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.
6. Conservation of Momentum: Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.
7. Conservation of Energy: Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.
8. Orbital Motion: Use mathematics or computational representations to predict the motion of orbiting objects in the solar system.
9. Reducing Human Impacts on Earth: Evaluate or refine a technical solution that reduces impacts on human activities on natural systems.
10. Engineering Designs & Solutions: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
11. Engineering, Technology, & Science: Demonstrate an understanding of the interrelationships between science, engineering, and technology.

SCIENCE ELECTIVES

NOTE: These courses do NOT fulfill scope and sequence requirements associated with Science I, II, III, and IV coursework. Some may not be offered in a given year, depending upon student interest and section availability.

Course Title: ASTRONOMY #1452s

Suggested Grade Level: 9-12

Prerequisites: *Physical Science (or concurrent enrollment), Algebra I (or concurrent enrollment)*

This introductory level, semester long course takes the students on a wide-ranging survey of the universe; from our solar system and its outermost reaches to galaxies, stellar bodies, black holes and large scale interstellar structures. Students consider theories about the scale and origin of the universe and the formation and motion of objects in space. The course emphasizes learning Astronomy from both a historical perspective and through the use of current technologies and discoveries. Curriculum and techniques include: use of digital simulation software, current scientific research and discoveries and the change for field observation. The course is a first step in preparing students for careers in Science or Astronomy and encourages lifelong astronomical involvement.

Learning Goals Associated with the Course:

1. Orbital Motion: Use mathematics or computational representations to predict the motion of orbiting objects in the solar system.
2. Energy from Stars: Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.
3. Big Bang Theory: Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.
4. Elements in Stars: Communicate scientific ideas about the way stars, over their life cycle, produce elements.
5. History of the Earth: Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.

Course Title: AP BIOLOGY #1450

Suggested Grade Level: 12

Prerequisites: *Science I-III; department screening including successful completion of summer work*

[Course Syllabus](#)

This rigorous introductory college level course is for students who want to pursue a college major in any branch of the sciences. There is an emphasis on the development of scientific skills, practices, and habits of mind. This course requires extensive readings and a demanding laboratory program. Students are expected to take the AP Examination in May. Students who do not take the AP Examination will have their transcripts amended to "Advanced" rather than "Advanced Placement". Summer work is required.

Learning Goals Associated with the Course:

1. The process of evolution drives the diversity and unity of life.
2. Biological systems utilize free energy and molecular building blocks to grow, to reproduce and to maintain dynamic homeostasis.
3. Living systems store, retrieve, transmit and respond to information essential to life processes.
4. Biological systems interact, and these systems and their interactions possess complex properties.
5. Change in the genetic makeup of a population over time is evolution.
6. Organisms are linked by lines of descent from common ancestry.
7. Life continues to evolve within a changing environment.
8. The origin of living systems is explained by natural processes.
9. Growth, reproduction and maintenance of the organization of living systems require free energy and matter
10. Growth, reproduction and dynamic homeostasis require that cells create and maintain internal environments that are different from their external environments.
11. Organisms use feedback mechanisms to regulate growth and reproduction, and to maintain dynamic homeostasis.
12. Growth and dynamic homeostasis of a biological system are influenced by changes in the system's environment.
13. Many biological processes involved in growth, reproduction and dynamic homeostasis include temporal regulation and coordination.
14. Heritable information provides for continuity of life.
15. Expression of genetic information involves cellular and molecular mechanisms.
16. The processing of genetic information is imperfect and is a source of genetic variation.

17. Cells communicate by generating, transmitting and receiving chemical signals.
18. Transmission of information results in changes within and between biological systems.
19. Interactions within biological systems lead to complex properties.
20. Competition and cooperation are important aspects of biological systems.
21. Naturally occurring diversity among and between components within biological systems affects interactions with the environment.

Course Title: AP BIOLOGY LAB #1450s

Suggested Grade Level: 12

Prerequisites: *current enrollment in AP Biology*

This lab will meet for half of a period all year long. Students can take both AP Biology and Honors Physics. If Honors Physics is not chosen, a half-period study hall will be assigned.

Course Title: AP ENVIRONMENTAL SCIENCE #1451

Suggested Grade Level: 11-12

Prerequisites: *completion of Academic or Honors Biology; department screening including successful completion of summer work*

This rigorous introductory college level course concerns the science of environmental problems, processes, and solutions. Students explore the interrelationships of the natural world and the impacts of humans. Students are exposed to several field techniques used to gather environmental data. Specific topics include land, air, and water pollution, biodiversity, global climate change, energy, public health, urban planning, and sustainability. Students are expected to take the AP Examination in May. Students who do not take the AP Examination will have their transcripts amended to “Advanced” rather than “Advanced Placement”. Summer work is required.

Course Title: AP ENVIRONMENTAL SCIENCE LAB #1451s

Suggested Grade Level: 11-12

Prerequisites: *current enrollment in AP Environmental Science*

This lab will meet for half of a period all year long. Students can take both AP Environmental Science and Honors Physics. If Honors Physics is not chosen, a half period-study hall will be assigned.

Course Title: HUMAN ANATOMY AND PHYSIOLOGY #1455

Suggested Grade Level: 11-12

Prerequisites: *completion of Academic or Honors Biology; completion or concurrent enrollment in Academic or Honors Chemistry*

This course provides mature students with an opportunity to explore and apply knowledge of the human body. The major organ systems of the body will be studied including skin and body membranes, skeletal system, muscular system, nervous system, senses, endocrine system, blood, cardiovascular system, lymphatic system and body defenses, respiratory system, digestive system and metabolism, urinary system and reproductive system. Frequent readings, discussions, homework, lab exercises and independent projects are required.

Learning Goals Associated with the Course:

- 1.1 The Language of Anatomy - I can communicate using the language of anatomy.

- 1.2 Organization - I can construct an explanation for the organization of the human body.
- 1.3 Maintaining Homeostasis - I can construct explanations for how humans maintain life using feedback loops.
- 2.1 Basic Chemistry - I can construct an explanation based on evidence for how the subatomic particles dictate the structure and function of atoms.
- 2.2 Molecules of Life - I can use models to describe the structure and function of water and the major biological molecules.
- 3.1 Microscopy & Cell Structure - I can use a model to explain the structure, function, and interactions among the organelles within a cell and how cells undergo cell division.
- 3.2 Cell Physiology - I can use models to construct explanations for the physiological functions of a cell.
- 3.3 Tissues - I can use models to describe the basic structures and functions of the major types of human tissues.
- 4.1 Body Membranes - I can use models to describe the differences in structure and function of the four types of body membranes.
- 4.2 The Integumentary System - I can use models to describe the structure and function of the integumentary system.
- 5.1 Overview of the Skeletal System - I can use models to describe the structure and function of the skeletal system.
- 5.4 Joints & Synovial Movements - I can describe the structural and functional classification of joints and types of synovial joints including the types of movement allowed.
- 6.1 Muscle Tissues Histology & Skeletal Muscle Physiology - I can use a model to describe how the microscopic anatomy of a skeletal muscle functions during contraction.
- 6.2 Gross Musculature - I can use a model or diagram to identify the major muscles of the human body.
- 7.1 Organization of the Nervous System -
- 7.2 Neuron Anatomy & Physiology - I can use models to construct an explanation based on evidence for how neurons transmit information.
- 7.3 Functional Anatomy of the Brain - I can use a model to explain how different regions of the brain have different functions.
- 9.1 Overview of Endocrine System & Hormone Action - I can construct an explanation for the organization and major mechanisms of action of the endocrine system.
- 9.2 Organs of the Endocrine System - I can communicate information for how the hormones of the endocrine system maintain homeostasis within the body.
10. Blood - I can construct an explanation for how blood serves as a vehicle for distributing body heat and for transporting nutrients, respiratory gases, and other substances throughout the body.
- 11.1 Anatomy of the Heart - I can use a model to construct an explanation for how heart rate is regulated.
- 11.2 Physiology of the Heart - I can use a model to construct an explanation for how heart rate is regulated.
- 11.3 Blood Vessels & Blood Pressure - I can construct an explanation for how the structure of blood vessels affects their function.
- 12.1 The Lymphatic System - I can use a model to describe the structures of the lymphatic system and construct an explanation for the functioning of the lymphatic system.
- 12.2 The Immune Response - I can use a model(s) to describe the immune response including both the nonspecific and specific defenses.
- 13.1 Anatomy of the Respiratory System - I can use a model to explain the functional anatomy of the respiratory system.
- 13.2 Physiology of the Respiratory System - I can use models & mathematics to construct an explanation for the physiological functioning of the respiratory system.
- 14.1 Anatomy of the Digestive System - I can use models to describe the structure and general functions of the organs of the digestive system.
- 14.2 Physiology of the Digestive System - I can construct an explanation for how the organs and structures perform digestion and absorption.
- 15.1 The Urinary System & Urine Formation - I can construct an explanation for how urine is formed and eliminated from the body.

15.2 Fluid, Electrolyte, and Acid-Base Balance - I can construct an explanation for how the kidneys maintain fluid, electrolyte, and acid-base balance.

Course Title: MARINE SCIENCE #1458s

Suggested Grade Level: 9-12

Prerequisites: *Science I (or concurrent enrollment)*

This course gives students an opportunity to explore the relationships between the physical, geological, and chemical properties of the oceans. It also covers the ecological, environmental, and evolutionary positions occupied by marine organisms. Students examine and at times use technologies for investigating oceans. Mankind's actions and their impact on the quality of our oceans are examined with an emphasis on the New England area. This is a laboratory-based course featuring individual research projects, and library, and Internet research.

Learning Goals Associated with the Course:

1. Principles of Marine Science: Explain the methodology of marine science and the role that scientific investigations play in the search for scientific understanding of the sea by describing the geology of ocean basins and characteristics of the marine environment as well as physical and chemical properties of seawater
2. Organisms of the Sea: Apply the basic principles of biology to marine organisms in order to explain and illustrate, with examples, how living systems interact with the biotic and abiotic environment
3. Humans & the Seas: Describe how humans are dependent on the diversity of resources provided by the marine environment and the effect that they have on those resources

Course Title: WILDLIFE #1459s

Suggested Grade Level: 9-12

Prerequisites: *Middle school science*

This course integrates the principles of zoology and ecology with the lives of different kinds of plants and animals that inhabit North America, with a focus on species that live in Maine. Students will learn about the descriptions of the lives, structures, growth, and classification of species in their natural habitats. Students will appreciate how each organism is adapted to its environment and highlights ways that humans and wildlife can reduce competition for resources that are needed by both. Frequent use of field guides, discussions, homework, lab exercises, and independent projects are required.

Course Title: STEM/PRE-ENGINEERING #1460s

Suggested Grade Level: 9-12

Prerequisites: *Middle school science*

This introductory, project-based course provides students with exposure to engineering principles, practices, and technology. It highlights the diverse roles of engineering in our society through specific instruction in the core areas of computational, mechanical, electrical, and sustainable engineering. Paramount to the course's methodology will be to instill an awareness of the science concepts underpinning engineered design. Students will develop skills in problem-solving and design, while also investigating authentic and contemporary problems. Opportunities for student engagement will include interaction with professionals in local and regional industry. Various platforms will be utilized, including 3D printing, CAD applications and various computational environments.

SOCIAL STUDIES

Academic Planning Notes:

- **Social Studies credits required: 3** (Social Studies I-III). All students must complete required assessments embedded in Social Studies I-III courses.
- Many students enroll in one or more additional social studies electives during their final two years of high school. Earlier enrollment requires department head approval.

SOCIAL STUDIES I

9th grade students take the two semester courses that follow:

Course Title: ACADEMIC INTRODUCTION TO WORLD RELIGIONS #1511a

Suggested Grade Level: 9

Prerequisites: *none*

[Course Syllabus](#)

Introduction to World Religions will examine the purpose of religion. We will especially focus on the origins, history, and practices of different religious traditions while paying special attention to religious founders, scriptures, branches, sacred objects and places, rites of passage, holidays, and conflicts.

Learning Goals Associated with the Course:

1. Collect and analyze primary and secondary sources, sacred texts, rites and rituals, biographies, history, art and architecture, geography and demographics related to better understanding five major world religions.
2. Identify how each major religion has internal diversity.
3. Identify connections between the five major religions.
4. Examine religious stereotypes.
5. Examine the role of religion in the US.

Course Title: ACADEMIC WORLD GOVERNMENTS #1511b

Suggested Grade Level: 9

Prerequisites: *none*

[Course Syllabus](#)

World Governments will examine the purpose of government and compare the basic philosophies and structures of government in five countries, with special emphasis on the United States. We will explore the rights and responsibilities of citizenship and current issues that cause conflict in each of the places we study.

Learning Goals Associated with the Course:

1. Understand purposes and forms of government.
2. Understand historical foundations for various forms of government.
3. Explore how governments are structured and function.
4. Analyze the relationship between governments and citizens.

SOCIAL STUDIES II

Prerequisite: Social Studies I

10th grade students take the two semester courses that follow or screen for AP European History

Course Title: ACADEMIC COMPARATIVE ECONOMICS #1521a

Suggested Grade Level: 10

Prerequisites: *Social Studies I*

[Course Syllabus](#)

This course will start with an examination of the basic origin and structures of various economic models, especially the basic difference between command and market economics. Students will then study economic policy in a variety of contexts from the perspective of individuals up to the national level.

Learning Goals Associated with the Course:

1. Explain and apply economic concepts to contemporary, personal and/or historical events.
2. Compare and contrast the characteristics of different economic systems.
3. Identify examples of monetary policy and explain its role in a modern economy.
4. Determine personal concepts of fairness and apply to fiscal policy.
5. Make responsible financial decisions in light of varying levels of risk.

Course Title: ACADEMIC AMERICAN FOREIGN POLICY #1521b

Suggested Grade Level: 10

Prerequisites: *Social Studies I*

[Course Syllabus](#)

In this course, students will be asked to develop their views on how both the United States and the individual student should interact with the rest of the world. After learning about relevant international relations theories and concepts, students analyze case studies within broader themes such as international organizations, foreign aid, genocide, conflict and international rivalries and competition.

Learning Goals Associated with the Course:

1. Students will be able to evaluate multiple sources for meaning and relevance.
2. Students will be able to present and defend an argument both orally and in writing.
3. Students will be able to produce an informed policy statement on a contemporary issue using appropriate social studies skills and knowledge.
4. Students will be able to explain how the forces of conflict and cooperation impact human interactions.
5. Students will be able to identify bias in sources.

Course Title: AP EUROPEAN HISTORY #1522

Suggested Grade Level: 10

Prerequisites: *Social Studies I; department screening including completed summer work*

[Course Syllabus](#)

This college-level course prepares students for the AP European History exam.. The course offers an in-depth look at selected areas of the history of Europe and related topics. College-level materials are used in class. Strong emphasis is placed on analytical writing, examination of historical schools of thought, and the ability to express points of view in both written and verbal modes.

Learning Goals Associated with the Course:

1. Gather, synthesize and evaluate information from multiple sources representing a wide range of views; make judgements about conflicting finds from different sources, incorporating those from sources that are valid and refuting others.
2. Construct and present arguments orally and/or in writing in which claims, counterclaims, reasons, and evidence demonstrate their relevance.
3. Evaluate how the forces of cooperation and conflict among people, as well as the movement and interactions of various groups of people, influence the division and control of the Earth's surface historically and in the present.
4. Identify and critique diverse perspectives on societal issues, trends, and events and articulate priorities different groups of people hold in their perspectives.
5. Compare different economic systems within the context of historical trends.

SOCIAL STUDIES III

Prerequisite: Social Studies II

In order to fulfill Maine's US History requirement, 11th grade students take one the fall and spring semesters of Academic US History or they may screen for AP United States History, which is a year-long course.

Course Title: ACADEMIC US HISTORY I #1531a

Suggested Grade Level: 11

Prerequisites: *Social Studies II*

[Course Syllabus](#)

In this course, students study major events, themes, and patterns in early American history. Students will develop key skills such as understanding historical cause and effect, analyzing sources, making historical interpretations of events, and making oral and written arguments to defend their history-based opinions.

Learning Goals Associated with the Course:

1. Develop compelling inquiry questions and conduct research on current social studies issues by applying appropriate methods and ethical reasoning skills, and using relevant tools, technologies, and sources from social studies fields to conduct the inquiry.
2. Develop informative/explanatory texts about social studies topics, including the narration of historical events, and present a coherent set of findings orally and/or in writing.
3. Evaluate various explanations and authors' differing point of view on the same event or issue, citing specific textual evidence from primary and secondary sources to support analysis
4. Using examples of historical or current issues, analyze the political structures, power, and perspectives of diverse cultures, including Native Americans, various historical and recent immigrant groups in the United States, and various cultures in the world.

Course Title: ACADEMIC US HISTORY II #1531b

Suggested Grade Level: 11

Prerequisites: *Social Studies II*

[Course Syllabus](#)

In this course, students study major events, themes, and patterns in 20th century American history. Students will develop key skills such as understanding historical cause and effect, analyzing sources, making historical interpretations of events, and making oral and written arguments to defend their history-based opinions.

Learning Goals Associated with the Course:

1. Develop compelling inquiry questions and conduct research on current social studies issues by applying appropriate methods and ethical reasoning skills, and using relevant tools, technologies, and sources from social studies fields to conduct the inquiry.
2. Develop informative/explanatory texts about social studies topics, including the narration of historical events, and present a coherent set of findings orally and/or in writing.
3. Evaluate various explanations and authors' differing point of view on the same event or issue, citing specific textual evidence from primary and secondary sources to support analysis
4. Using examples of historical or current issues, analyze the political structures, power, and perspectives of diverse cultures, including Native Americans, various historical and recent immigrant groups in the United States, and various cultures in the world.

Course Title: AP UNITED STATES HISTORY #1532 (Concurrent Enrollment Option)

Suggested Grade Level: 11

Prerequisites: *Social Studies I and Social Studies II; department screening including completed summer work*
[Course Syllabus](#)

This course, designed for the student who wishes to prepare for the Advanced Placement US History Examination, provides an in-depth examination of US history from the origins of British settlement in North America and the cultures that discovered and created American society through the contemporary period. Some of the key topics to be covered include: the interactions of European, Native American and African peoples, Civil War, Reconstruction, industrialization, progressivism, World Wars I and II, the Great Depression and the Civil Rights Movement. College level materials are utilized and a heavy emphasis is placed upon analytical writing, examination of historical schools of thought and the ability to express points of view in a seminar format. This course also will introduce students to the process of thinking historically, with a focus on original historical sources. There is required summer work for this course.

Students may take this course as part of the USM Concurrent Enrollment program with the following restrictions:

3.0 GPA on transcript

Learning Goals Associated with the Course:

1. Apply an understanding of the forces of continuity and change to analyze the evolution of historical eras, the persistence of enduring themes, and the significance of turning points and current issues in Maine, Maine Native American cultures, the nation and the world.
2. Select and organize evidence from primary and secondary sources to support an historical interpretation or argument.
3. Trace and evaluate the development of democratic ideals, the persistence of enduring themes (e.g. power and authority; migration) and their impact on societal issues, trends and events.
4. Identify and critique diverse perspectives on societal issues, trends and events and articulate priorities different groups or people hold in their perspectives.
5. Apply an understanding of causality, connections, and significance to develop credible explanations of historical events based on reasoned interpretation of evidence.

SOCIAL STUDIES ELECTIVES

NOTE: these courses do NOT fulfill scope and sequence requirements or learning goals/standards for graduation associated with Social Studies I-III coursework.

Course Title: ART & SOCIETY, PARTS I & II #1561a (fall) and #1561b (spring)

Suggested Grade Level: 11-12

Prerequisites: *none*

These two semester-length courses examine the creative impulse throughout Western history. Semester 1 features art, architecture and culture from the prehistoric to medieval eras, while semester 2 focuses on the modern period (the Renaissance to the present). Students uncover the artistic and intellectual advances in history and their connection to society through classroom discussions, analysis of written and visual works as well as studio art experiences involving various media. The courses will be taught by a pair of teachers from both the Visual Arts and Social Studies departments, and is a highly interdisciplinary, hands-on learning experience.

Learning Goals Associated with the Course:

1. Apply an understanding of the forces of continuity and change to analyze the evolution of historical eras, the persistence of enduring themes, and the significance of turning points and current events in the world.
2. Select and organize evidence from primary and secondary sources to support an historical interpretation or argument.
3. Analyze works of art and architecture using the elements and principles of art in combination with other factors to provide critical insight into both student-made and historical works of art.
4. Research and explain how art and artists reflect and shape their time and culture.
5. Analyze the characteristics and purposes of visual arts to understand history and/or world cultures.

Course Title: MUSIC & SOCIETY, PARTS I & II #1562a (fall) and #15612 (spring)

Suggested Grade Level: 11-12

Prerequisites: *none*

Between Music & Society Part I and Part II, the entire spectrum of music history will be covered. Part I will focus more on the music of the Ancient World, Middle Ages, Renaissance and Baroque periods. Part II will focus on the music of the Classical and Romantic periods along with the 20th and 21st centuries to include contemporary music. This is a music history course that will examine and listen to the characteristics of music from different eras and connect the music to the events and concerns of their times. While listening to and describing music will be a large component of the course, it is a historical survey of music though there may be occasional overlaps with the topics covered in a music appreciation course.

Music & Society Part I and Part II are semester-long courses providing 0.5 elective credit each. There is no prerequisite for either course. Students may take either or both courses.

Learning Goals Associated with the Course:

1. Identify and summarize the important features of four major periods in the history of music.
2. Analyze select works from music traditions based on focused and active listening.
3. Identify elements of musical form and structure of selected pieces and predict what musical era they represent.
4. Appraise cultural, religious, and political events influencing musical expression.

Course Title: PSYCHOLOGY #1558s

Suggested Grade Level: 11-12

Prerequisites: *none*

[Course Syllabus](#)

This course gives the student a basic understanding of individual human behavior. The course covers topics such as motivation, perception, communication, learning, thinking, personality, and abnormal behavior. Students develop an understanding of these topics through experiments and consideration of the human experience.

Learning Goals Associated with the Course:

1. Describe major concepts related to the study of learning, cognition, and memory.
2. Describe major concepts related to the study of sensation and perception, and motivation and emotion.
3. Describe the factors that create distinct personality traits in humans and account for differences in intelligence.
4. Describe and analyze the psychological challenges and issues faced during different developmental stages.
5. Describe the major concepts related to the study of stress and health, abnormal behavior, and therapy.
6. Analyze the major concepts in the field of social psychology and how groups influence individual behavior.

Course Title: SOCIOLOGY #1559s

Suggested Grade Level: 11-12

Prerequisites: *none*

[Course Syllabus](#)

The study of sociology involves learning about relationships within groups and in social institutions. The course provides students with a basic and practical knowledge of the working relationships within cultures, families, institutions, and belief systems. Principles are applied to social problems and issues, addressing topics such as race, family, religion, poverty, population, values, and education.

Learning Goals Associated with the Course:

1. Describe the components of culture.
2. Analyze how culture influences individuals, including themselves.
3. Evaluate important social institutions and how they respond to social needs.
4. Assess how social institutions and cultures change and evolve.
5. Describe the process of socialization across the life course.
6. Analyze the effects of social inequality on groups and individuals.
7. Explain the relationship between social institutions and inequality.

Course Title: AP US GOVERNMENT & POLITICS #1542

Suggested Grade Level: 12

Prerequisites: *Social Studies III; department screening including completed summer work*

[Course Syllabus](#)

This Advanced Placement course provides students with the opportunity to fully understand and appreciate the profound impact that government has on our lives. We will examine the foundations and structure of American government, including early American history, the Constitution, political parties, elections, media, special interest groups, and current events.

Learning Goals Associated with the Course:

1. Evaluate how people influence government and work for the common good.
2. Evaluate current issues by applying the democratic ideals in the founding documents and constitutional principles of the United States government, and explain how and why democratic institutions and interpretations of democratic ideals have changed over time.
3. Compare and evaluate various forms of government and political systems in the United States and the world, and describe their impact on societal issues, trends and events.
4. Analyze constitutional principles, and the roles of the citizen and the government, in major laws or cases, and compare the rights, duties, and responsibilities of United States citizens with those of citizens from other nations

VISUAL ARTS

Academic Planning Notes:

- The Department recommends that at least ½ credit in the Visual Arts be completed prior to grade 11.
- **Foundations in Visual Arts is a prerequisite for all visual arts courses**, taken freshman year.
- Students planning to take visual arts courses to fulfill the Fine Arts requirement are encouraged to take Foundations in Visual Arts.
- Many students exceed the minimum Fine Arts credit requirement by taking several visual arts courses.

Course Title: FOUNDATIONS IN VISUAL ARTS #2110s

Suggested Grade Level: 9

Prerequisites: *none*

[Course Syllabus](#)

This course is available to students who wish to partially fulfill the fine arts requirement, as well as students who are considering taking other art courses later during high school. Students develop a visual and aesthetic “foundation” on which to build by increasing their exposure to the visual world, enlarging their visual vocabulary and experience, improving their skills in visual expression, and making them more aware of their visual surroundings. Students will use design elements and principles in a variety of media such as paint, printmaking, drawing, and 3-dimensional forms.

Learning Goals Associated with the Course:

1. Students will evaluate the elements and principles of design within a piece of art while making comparisons with other pieces of art and their techniques.
2. Students will compare the effects of different media, tools, techniques, and processes to create a variety of original artwork.
3. Students will apply and analyze creative problem-solving skills to help improve their work and the work of others.
4. Students will identify the difference between a personal opinion and an informed judgment when analyzing a work of art.
5. Students will analyze visual arts skills and concepts that are similar across the various disciplines. They will be able to explain how knowledge of the arts relates to learning in careers, life skills, and recreational activities.

VISUAL ARTS ELECTIVES

The second half of a Visual Arts credit for graduation can be met in the following courses listed. Students who have not met the Prerequisite of Foundations in Visual Arts may request enrollment in one of these courses with the approval of the Visual Arts Department Chair.

Learning Goals Associated with the following Visual Arts Courses:

1. Students will be able to research and explain how artists reflect and shape their time and culture.
2. Students will use the Elements and Principles of Design to create original artworks that demonstrate the development of personal style.
3. Students will analyze and evaluate varied interpretations of works of art using evidence from technical knowledge, observations, and a variety of print and/or non-print sources.
4. Students will analyze the characteristics and purposes of visual arts to understand history and/or world cultures.

Course Title: CERAMICS I #2131s

Suggested Grade Level: 10-12

Prerequisites: *Foundations in Visual Arts*

[Course Syllabus](#)

Designed for the student who chooses to work intensely with clay, the course teaches the skills and processes involved in pottery. Various hand-building techniques, work on the potter’s wheel and the production of functional and nonfunctional as well as sculptural clay objects are taught. Through this course, a student is able to focus on technical, historical, aesthetic, cultural and contemporary concerns of clay workers as they develop their own personal and artistic ways of working.

Course Title: CERAMICS II #2132s**Suggested Grade Level:** 10-12**Prerequisites:** *Ceramics I*

This course should be taken the second semester after Ceramics I. Students in this course will be building on their basic skills in hand building and wheel throwing with clay, improving craftsmanship and confidence. Both the creation of non-objective and utilitarian pieces will be explored. The overall goal is to allow the student to grow as an artist through the study and become more self-aware of their art. This course is a recommended prerequisite before taking AP 3D design.

Course Title: AP 3D CERAMICS #2133**Suggested Grade Level:** 11-12**Prerequisites:** *Department screening or grade of C or higher in Ceramics II or Sculpture*

AP 3D Ceramics is a year-long course that elaborates on the many different means of working with clay and related sculptural materials as an artistic medium. Understanding and working with the principles of design will be stressed throughout this course as well as relationships of form to historical and cultural periods. Because of the advanced level of the assigned work, previous classes in ceramics and/or sculpture are required. This means that it will be possible for students who are seriously interested in a particular area to submit an AP Portfolio in that media.

Course Title: DRAWING #2122s**Suggested Grade Level:** 9-12**Prerequisites:** *Foundations in Visual Arts*[Course Syllabus](#)

Drawing is an art form and means of personal expression. Its practice increases visual literacy: understanding what and how we see. Design elements of drawing are studied including historical study of visual communication. Visual observation, basic media skills, and creative uses of drawing media are stressed. Various drawing media such as pencil, ink, charcoal, mixed media and the computer are explored as drawing tools.

Course Title: AP 2D DESIGN #2127**Suggested Grade Level:** 11-12**Prerequisites:** *Department screening or grade of C or higher in Drawing, Painting, or Photography*

AP 2D Design is a year-long course that allows students to develop a greater command of technical skills, various media, and advanced vocabulary while pursuing more thematic depth and complexity, and a wider range of creative responses in their work. Overall, it is a "Portfolio Preparation" course meant to build and refine 2D work for college and AP Studio Art Portfolios, or for personal interest. Thus, another major emphasis of the class is on the development of personal work, leading students to explore artistic interest and intent. This course prepares the student to submit a portfolio of two-dimensional work in painting, drawing, design, and printmaking. It is recommended that students have previously taken Foundations, Studio Art, and other related art courses.

Course Title: PAINTING #2123s**Suggested Grade Level:** 9-12

Prerequisites: *Foundations in Visual Arts*
[Course Syllabus](#)

Students experience various painting media and techniques. Students come to understand the expressive qualities of acrylic, watercolor, and tempera through their work. In addition, the historical significance of artists as reflectors of their time is studied providing a context for an understanding of visual art. In applications including drawing assignments, written responses, and studio work, students will demonstrate an understanding of painting's visual language.

Course Title: PHOTOGRAPHY #2124s
Suggested Grade Level: 11-12 (*10th grade with instructor approval*)
Prerequisites: *Foundations in Visual Arts*

A visual language, photography is part of contemporary communication and culture. Black and white photography, both analog and digital, is the medium used to learn the language. Students encounter the elements and principles of design, the history and appreciation of photography, the use of 35mm analog cameras, developing film, and darkroom techniques as well as non-silver processes. The digital component of the course will involve the digital camera, scanning negatives, and positives, and preparing images on the computer to make black and white inkjet and laser prints. Emphasis is placed on seeing, analyzing, and creating through structured photographic assignments, written analyses of master photographers, journals, readings, and group discussions.

Course Title: SCULPTURE #2125s
Suggested Grade Level: 9-12
Prerequisites: *Foundations in Visual Arts*

Sculpture is an intermediate course for students who enjoy working with clay, plaster, wood, wire, and mixed media. The course concentrates on developing technical skills and artistic appreciation of successful three-dimensional artwork. Studio projects will be tied to the discussion of art historical topics and/or uses of art in modern societies. Lessons will include studio work and class discussions in which students are required to participate. Students should have some understanding of the elements and principles of art and other concepts fundamental to art making, which will be further developed. The dynamics of the spatial aspects of an object and how an idea develops into an art form are investigated. Students will carve, cast and assemble in three dimensions with clay, metal, plastic, wood, plaster, found objects and more.

Course Title: PRINTMAKING #2128s
Suggested Grade Level: 9-12
Prerequisites: *Foundations in Visual Arts*

Students will learn the basics techniques of fine art printmaking. Relief printing, mono-printing, intaglio, and collograph methods will be explored. This course covers the distinctive nature of printmaking including: tools, inks, paper, plate preparation, registration, printing processes and qualities of prints e.g. overlays, transparency, offset, and multiple images. The goal is for students to gain the skills and confidence to produce multiple images by hand printing and on a press while exploring personal visual expression. Hand printmaking techniques will engage the student with problem solving in drawing, design, and color. Class sessions will include independent and collaborate printing, lecture, demonstrations, discussion, and critique. Students will be introduced to the work of artists and the history/tradition of fine art prints.

WORLD LANGUAGES

Academic Planning Notes:

- Students interested in pursuing post-secondary education (particularly 2 or 4 year college programs) are expected to have completed at least 2 years of a World Language, and many colleges require 4 years at the high school level.
- Placement in various course levels depends upon proficiency.

Course Title: WORLD LANGUAGE I (French #1211, German #1212, Spanish #1213)

Suggested Grade Level: 9

Prerequisites: *none*

This course is for students beginning a language or continuing with their middle school introduction to that language. Students will aim to meet the novice-mid level of proficiency (ACTFL Guidelines) in the four linguistic skill areas (speaking, listening, reading and writing), as well as cultural understanding.

Learning Goals Associated with the Course:

1. Communicate on very familiar topics using a variety of words practiced or memorized.
2. Recognize some familiar words and phrases when hearing them spoken.
3. Recognize and understand some learned or memorized words and phrases when read.

4. Present information about self and some other very familiar topics using a variety of words, phrases, and memorized expressions.
5. Write lists and memorized phrases on familiar topics.
6. Describe practices and perspectives of a culture(s) in which the target language is spoken.
7. Identify connections between target language and another content area using either English or the target language.

Course Title: WORLD LANGUAGE II (French #1221, German #1222, Spanish #1223)

Suggested Grade Level: 10

Prerequisites: *World Language I*

Students will be able to communicate in the present and past. They will be able to produce sentences and strings of sentences while comprehending more advanced structures. Students will strive to meet novice-high level of proficiency (ACTFL Guidelines).

Learning Goals Associated with the Course:

1. Communicate and exchange information about familiar topics using phrases and simple sentences, sometimes supported by memorized language.
2. Handle short social interactions in everyday situations by asking and answering simple questions.
3. Understand words, phrases, and simple sentences related to everyday life.
4. Recognize pieces of information and sometimes understand the main topic of what is being said.
5. Understand familiar words, phrases, and sentences within short and simple texts related to everyday life. Understand the main idea of what was read.
6. Present basic information on familiar topics using practiced phrases and simple sentences.
7. Write short messages and notes on familiar topics related to everyday life.
8. Identify and explain how perspectives of a culture(s) are related to cultural practices of a culture(s) in which the target language is spoken.
9. Explain how products such as political structures, historical artifacts, literature, and/or visual and performing arts reflect the perspectives of a culture(s) in which the target language is spoken.
10. Use knowledge of the target language to identify and make connections with specialized vocabulary used in various fields of study.
11. Explain the importance of culture and language acquisition in a 21st century global economy.

Course Title: WORLD LANGUAGE III (French #1231, German #1232, Spanish #1233)

Suggested Grade Level: 11

Prerequisites: *World Language II*

Students will be able to produce written and spoken language in the present, past, and future. They will communicate using strings of sentences and paragraphs aiming to reach the intermediate-low level of proficiency (ACTFL Guidelines). Their increase in vocabulary will aid in understanding more complicated texts and films.

Learning Goals Associated with the Course:

1. Participate in conversations on a number of familiar topics using simple sentences. Handle short social interactions in everyday situations by asking and answering simple questions.
2. Understand the main idea of short and simple texts when the topic is familiar.
3. Present information on most familiar topics using a series of simple sentences.
4. Write briefly about most familiar topics and present information using a series of simple sentences.
5. Explain how products, practices, and perspectives of a culture in which the target language is spoken contribute to the culture in which the student lives.
6. Use language within and beyond the school setting.

Course Title: WORLD LANGUAGE IV (French #1241, German #1242, Spanish #1243)

Suggested Grade Level: 12

Prerequisites: *World Language III*

Students will be able to produce written and spoken language in the present, past, future. They will learn to express themselves in hypothetical situations as well as analyze, compare and contrast. Students will strive to communicate at the intermediate-mid level of proficiency (ACTFL Guidelines).

Learning Goals Associated with the Course:

1. Participate with ease and confidence in conversations on familiar topics. Talk about events and experiences in various time frames and describe people, places, and things. Handle social interactions in everyday situations, sometimes even when there is an unexpected complication.
2. Understand the main idea in messages and presentations on a variety of topics related to everyday life and personal interests and studies. Understand the main idea in conversations that are overheard.
3. Understand the main idea of texts related to everyday life and personal interests or studies.
4. Make presentations on a wide variety of familiar topics using connected sentences.
5. Write on a wide variety of familiar topics using connected sentences.
6. Use language within and beyond the school setting.

Course Title: WORLD LANGUAGE V (French #1251, German #1252, Spanish #1253)

Suggested Grade Level: 12

Prerequisites: *World Language IV or teacher recommendation*

Students will do an in-depth study of all previously learned tenses and strive to produce language at the intermediate-high level of proficiency (ACTFL Guidelines). Students will hone their skills by viewing full-length films, debating global current events, reading and discussing literature, creating skits and stories and occasional exchanges with schools in other countries. These courses will require the ability to work independently, individually, and in small groups.

Learning Goals Associated with the Course:

1. Participate with ease and confidence in conversations on familiar topics. Talk about events and experiences in various time frames. Describe people, places, and things. Handle social interactions in everyday situations, sometimes even when there is an unexpected complication.
2. Make presentations in a generally organized way on school, work, and community topics, and on researched topics. Make presentations on some events and experiences in various time frames.
3. Write on topics related to school, work, and community in a generally organized way. Write some simple paragraphs about events and experiences in various time frames.
4. Easily understand the main idea in messages and presentations on a variety of topics related to everyday life and personal interests and studies. Understand a few details of what is overheard in conversations, even when something unexpected is expressed. Follow what is heard about events and experiences in various time frames.
5. Easily understand the main idea of texts related to everyday life, personal interests, and studies. Follow stories and descriptions about events and experiences in various time frames.

WORLD LANGUAGES ELECTIVES

Course Title: GLOBAL CULTURE IN FILM #1261a (fall) and #1261b (spring)

Suggested Grade Level: 11-12

Prerequisites: *none*

Students will have the opportunity to expand their awareness of other cultures through the study of foreign films and to develop an appreciation for how films can reflect a culture. Students will review and analyze award-winning films of a variety of genres in several world languages. Foreign films are a unique way to examine life and civilization in another country as they open a window into an unfamiliar culture and society and expand one's horizon. Detailed study of works will help students make cultural connections and comparisons with their own cultures and increase their global awareness. The course will have a discussion format where we will discuss the elements of film form, narrative, and cultural manifestation.

REGION 10 TECHNICAL HIGH SCHOOL

Region 10 Technical High School is located in Brunswick and serves the needs of Freeport, Brunswick, Mt. Ararat students, and Harpswell Coastal Academy students. Students are transported to Region 10 for half day morning or afternoon programs. Region 10 has developed dual enrollment and articulation agreements with some post-secondary schools which means that these colleges will award credit for work completed at Region 10. Opportunities for dual enrollment are available for students in Culinary Arts, Metal Fabrication/Welding, Automotive Technology, Early Childhood Development, Health Occupations, Outdoor Powersports I, Auto Collision Repair, and Creative Digital Media. Students in Early Childhood Development, Health Occupations (EMT & CNA), Auto Collision Repair, Creative Digital Media, and Building Trades may also earn transferable college credit (concurrent enrollment) reported on a transcript.

Please contact Assistant Director John Stivers at Region 10 Technical High School with questions related to individual programs at 729-6622, ext. 112.

Academic Planning Notes:

- A full year Region 10 course usually represents 3 credits. Check to be sure of your credit status.
- Certain Mt. Ararat credit requirements may be modified for Region 10 students. Please consult your school counselor for details.
- **TECHNICAL ENGLISH** is available at Region 10 for students whose course load would otherwise prevent them from scheduling a technical program. Permission from your school counselor and English department chair is required for enrollment in Technical English.

Course Title: FOUNDATIONS OF TECHNOLOGY #7000

Program-specific prerequisites: *solid high school-level reading and math ability; genuine desire to pursue or explore technical education*

Foundations of Technology is a new one-year program providing instruction to 9th or 10th grade students in Career and Technical Education to prepare them for future enrollment in one of the Region 10 programs, most of which result in national or state certifications or licenses. Many of the skill standards included in the Foundations curriculum are the same introductory skills taught in our specialized CTE program areas, creating a sequential curriculum to enhance student success. Students will understand the technological process and related theory, and be able to operate a wide variety of tools and technology to get exposure to an impressive range of technical programs and disciplines.

Over the course of the school year, all Foundations students will rotate through and experience three weeks in every technical program at Region 10. This rotation allows students to make an informed decision about which Region 10 program will best suit them the following year should they elect to attend Region 10. Foundations students also enjoy the variety of learning and activities in the rotation, and can apply their learning in their personal lives. Academic courses (English and Social Studies) will be available so that students can fit Foundations into their schedules for either the AM or PM session.

Because Foundations of Technology is neither a trade-specific program nor open to juniors or seniors, there is no dual enrollment for this course.

Course Title: AUTO COLLISION REPAIR #7001

Program-specific prerequisites: *proficient in basic high school math and science; good “people skills” and ability to work in teams; genuine interest in learning the trade*

Students enrolled in this two-year course will receive instruction on how to safely and productively perform all phases of collision repair and refinishing. This program is divided in four courses consisting of: painting and refinishing, non-structural analysis and damage repair, mechanical and electrical components. Automotive refinishing is a major component of this program. Color mixing, matching, tinting and blending techniques are explored emphasizing hands-on experience. Upon completion of this course, the student should be able to enter the workforce at an entry level position or move on to a technical college to further advance their skills. Students are encouraged to participate in SkillsUSA (student organization) to enhance their leadership opportunities and compete at both state and national levels.

Dual enrollment credits are available through Northern Maine Community College for Industrial Safety and Thin Metal Welding, and articulation agreements are available for Collision Repair and Refinishing with Ohio Technical College and Universal Technical Institute.

Course Title: AUTOMOTIVE TECHNOLOGY I #7002

Program-specific prerequisites: *shall have passed or be concurrently enrolled in Algebra I; pass interview with program instructor; pass entry quiz; Attention to detail, a genuine interest in learning about automotive technology, and a desire to make things work correctly; preference given to qualified students who also have at least their Maine (driver’s) learner’s permit*

NOTE: morning only

The one-year Automotive Technology I program introduces students to the world of automotive maintenance and repair through a combination of classroom training and shop work on customer vehicles. Students will gain the knowledge, skills and attitudes necessary to safely work in a shop setting using the tools and equipment to perform professional repairs on modern vehicles. Utilizing national, state, and local resources including standards set by NATEF (National Automotive Technicians Education Foundation) and the Maine Department of Education, students will have the opportunity to earn professional certifications from ASE (Automotive Service Excellence) and a Maine State Inspection License. Units covered during this first-year program include comprehensive safety training, Brake Systems, Electrical and Electronic Systems, Engine Performance, and Steering and Suspension Systems. Class meets Monday-Friday for 2.5 hours in the AM session only. Students are encouraged to participate in SkillsUSA (student organization) to enhance their leadership opportunities and compete at both state and national levels.

Articulation agreements are currently in place for the second year of the program.

Course Title: AUTOMOTIVE TECHNOLOGY II #7003

Program-specific prerequisites: *successful completion of Automotive Technology I; ongoing commitment to study automotive technology*

NOTE: afternoon only

The one-year Automotive Technology II program is designed for students who have successfully completed the Automotive Technology I program. Auto Tech II continues to build a student's portfolio of skills and knowledge in the automotive field through work in the shop that strengthens and augments previously covered units of instruction. Newly covered units include Automatic Transmission and Transaxle, Manual Drive Train and Axles, Engine Repair, and Heating and Air Conditioning Systems. All students completing the course will leave with a professional resume and a letter of introduction to enable the student to seek immediate employment in the automotive field or to enhance the admission process into a post-secondary school. ASE certification and State Inspection licensing are encouraged. Professional development through SkillsUSA continues to provide growth opportunities as well as potential scholarship sources. Students are encouraged to participate in SkillsUSA to enhance their leadership opportunities and compete at both state and national levels.

Articulation agreements are available at SMCC and CMCC.

Course Title: BUILDING TRADES #7004

Program-specific prerequisites: *good grasp of basic high school math; can work well independently and with others; genuine interest in learning the trade*

This two-year course of study provides a combination of masonry and carpentry. Together, they offer a wide range of classroom and hands-on work experiences in the construction trades with a strong emphasis on safety. Carpentry areas of concentration include: rough and finish carpentry; floor, wall, and roof framing; exterior trim; insulation; drywall installation; construction planning and drafting. Masonry areas of concentration include: forms and foundations; brick and block work; stone, tile, masonry materials and

mortars; scaffolding; chimneys; fireplace construction; arches, and steps. Working offsite on community project functions is an important component of building trades. Students are encouraged to participate in SkillsUSA (student organization) to enhance their leadership opportunities and compete at both state and national levels.

One college credit is available through Concurrent Enrollment with Central Maine Community College

Course Title: CREATIVE DIGITAL MEDIA #7005

Program-specific prerequisites: *true desire to learn or explore graphic arts/digital communications; successful completion of related courses or ability to demonstrate evidence of computer operation and drawing skills*

This course meets the Fine Arts requirement

With Graphic Design and Illustration as a foundation for the program, Creative Digital Media is designed to introduce students to careers associated with digital design including but not limited to graphic design, illustration, animation, and video game design. Students will be introduced to the basic principles and elements of design and gain software experience required to solve visual communication problems. Using industry standard Adobe software and related programs, students develop the ability and confidence to create appropriate and successful designs for a variety of applications. Additionally, upon completion of the course, students will have the opportunity to become Adobe Certified Associates upon successful completion of the Adobe exam. The main areas of focus are: Understanding and utilizing principles and elements of design effectively; Learning industry standard Adobe software (Photoshop, Illustrator, InDesign, and AfterEffects); Developing analytical thinking and problem solving skills for the digital design industry; Preparing portfolios for professional presentation, evaluation, and college entry.

Six Southern Maine Community College credits are available through concurrent enrollment for each of the two years of the program, for a possible total of 12 credits.

Course Title: Course Title: CULINARY ARTS #7006

Program-specific prerequisites: *solid high school-level reading ability; able to work independently and with a team; genuine interest in learning Culinary Arts*

Culinary Arts prepares students for careers that support Maine's Hospitality Industry. Students learn concepts in food preparation and restaurant management. In this two-year program, emphasis is placed on maintaining a healthy environment through sanitation training and workplace wellness. Knowledge is applied through catering school and public functions. Participation in our public restaurant continues to develop competencies. Students earn ServeSafe Manager Certification upon successful completion of the National Restaurant Association Exam. Students are encouraged to participate in SkillsUSA (student organization) to enhance their leadership opportunities and compete at both state and national levels.

Articulation agreements are available with Culinary Institute of America and all Maine Community College culinary programs.

Course Title: EARLY CHILDHOOD EDUCATION I #7007

Program-specific prerequisites: *solid high school-level reading ability; genuine desire to work with preschool children; behavior and grooming appropriate for work with preschool children and their families*
NOTE: morning only

The one-year Early Childhood Education I program prepares individuals to provide care and guidance of young children under the supervision of professional personnel. Students study the introductory ideas and concepts of Early Childhood Education from birth to grade 3 in an academic classroom. Students plan, organize and conduct activities for children to promote physical, interpersonal, motor, mental, and social growth and development of acceptable behavior: cleanliness, eating, playing, resting, and toilet habits. Supervised students operate a daycare three sessions per week. Students are encouraged to participate in SkillsUSA (student organization) to enhance their leadership opportunities and compete at both state and national levels. Students have the opportunity to obtain CPR, First Aide, and Servsafe Food Handler Certifications.

Three dual enrollment credits are currently in place for the second year of the program.

Course Title: EARLY CHILDHOOD EDUCATION II #7008

Program-specific prerequisites: *successful completion of Early Childhood Education I*
NOTE: afternoon only

Year two of the program builds on content and skills learned in Early Childhood Education I. When not in the academic classroom, students will continue supervised teaching in the preschool program or may choose to practice teaching skills more independently in an internship position. Students will also have the ability to become Maine Certified Early Childhood Care Assistants.

Three college credits are available through this dual enrollment course, Introduction to Early Childhood Education, through Southern Maine Community College.

Course Title: GENERAL TRADES #7009

Program-specific prerequisites: *willingness to learn, be safe, and to follow directions*

The General Trades program is a one-to-two year vocational training program designed to prepare students for employment or future placement in another Region 10 program. Emphasis is placed on the development of attitudes, behaviors, and basic skills common to all trades. The Cooperative Learning approach is utilized in both the classroom and the workshop areas. The student must be able to work at a community job experience independently, be self-motivated, understand the concept of work, and be able to follow directions.

No dual enrollment credit or articulation agreements are currently in place for this program.

Course Title: HEALTH OCCUPATIONS – CERTIFIED NURSING ASSISTANT #7010

Program-specific prerequisites: *be at least 16 years of age as of September 1 of the current school year; be a high school junior or senior; have solid high school-level math and reading skills; have no record of criminal convictions or suspensions for violence; abstain from drug and alcohol use; be trustworthy with a good work*

ethic and excellent “people skills”; have a genuine interest in the field

Health Occupations is a one-year course for juniors and seniors and prepares students to sit for the Maine State Certification Exam to earn CNA certification. The class includes academic study, skills lab, and clinical time in long term and hospital settings. The CNA certification allows graduates to work in a wide variety of health care settings offering comprehensive and compassionate daily care to elderly or ill patients. The academic study includes anatomy and physiology, medical terminology, ethics, pathophysiology (the disease process), infection control, patient care skills, and portfolio development. Students will need to purchase uniforms and white sneakers or shoes (costing approximately \$100; scholarship money may be available to help defray this cost if needed). After their year of CNA study, students may opt to take the EMT program to interface with and enhance their medical studies.

Six Southern Maine Community College credits are available through concurrent enrollment.

Course Title: HEALTH OCCUPATIONS – EMT BASIC #7011

Program-specific prerequisites: *solid high school-level math and reading ability; able to work independently and with a team; genuine interest in and commitment to the study of emergency medicine; must be at least 16 years old by October 1 of the current school year*

The EMT Basic on-year course of study includes trauma emergencies, pediatrics, special patient populations, and spinal assessment. Training includes clinical time in a hospital emergency facility and “ride along” training with a licensed Emergency Medical Service. Training will include vital signs, CPR/AED, oxygen administration, diabetic emergency treatment, spinal immobilization, and use of airway devices, along with other important life support training, including bleeding control. Students will learn the technical terms for life saving medicines and emergency application. Students must be prepared for a serious, rigorous course of study, and must possess a maturity commensurate with treating life-threatening incidents. The program features a state-of-the-art computerized manikin, “Deloris Perkins,” on which students can practice critical response skills before working on real people. After their year of EMT study, students may opt for the Health Occupations/CNA curriculum to interface with and enhance their medical studies. Students successfully completing the dual enrollment are eligible to sit for the national EMT Basic certification exam.

Seven concurrent enrollment credits with SMCC are available.

Course Title: HEATING, VENTILATION, & AIR CONDITIONING (HVAC) #7012

Program-specific prerequisites: *juniors with a strong desire to study HVAC technology that have solid attendance and grade-level math and science ability will be given preferential placement; seniors may also take Year One of the course if space is available*

Due to an extreme local shortage of technicians in this well-paying, fast-paced trade, Region 10 is pleased to offer this new two-year program starting in 2021-2022. This challenging and relevant heating, ventilation, and air conditioning (HVAC) program prepares you for the State of Maine Journeyman’s License Exam offered before you graduate from high school. This two-year program is guided by industry HVAC standards, the National Fire Protection Agency Code (NFPA) and the State of Maine Heating Code. You will develop skills relating to the installation and service of residential and light commercial heating equipment, electric motors, boiler systems, air conditioning systems, and basic and control wiring. New technologies such as solar power

and alternative energy sources are explored. You will be better prepared for college or an apprenticeship program in plumbing and air conditioning technology with this program. The State of Maine Plumbing Code is emphasized as you develop relevant skills such as the installation and troubleshooting of piping, pumps, water heaters, compressors, Pex hot and cold water lines, and alternative energy sources.

While dual enrollment opportunities are under development, none are available at this time.

Course Title: METAL FABRICATION AND WELDING #7013

Program-specific prerequisites: *solid high school math ability, especially in terms of fractions and measurement; ability to work well independently and as a team member; genuine interest in the trade*

The Metal Fabrication and Welding program combines several trades. Topics covered include safety, measurement, general metallurgy, bench work, layout, and blueprint reading. Welding processes covered are shielded metal arc welding, metal inert gas (MIG) welding, tungsten inert gas (TIG) welding, flame cutting, along with electrode use and selection. Technical college credits may be awarded for blueprint reading and basic welding courses while preparing the student for qualifications towards the American Welding Society structural plate certification.

Articulation agreement credits are available at Maine Community Colleges.

Course Title: OUTDOOR POWERSPORTS I #7014

Program-specific prerequisites: *mechanical aptitude and genuine interest in the field*

NOTE: morning only

Outdoor Powersports technicians inspect, service, and repair small engines, recreational vehicles, and motorcycles. Students in this one-year, first-year course learn to use hand and power tools and various precision measuring instruments, basic engine theory, two and four cycle engine overhaul, lubrication, cooling systems, electrical systems, carburetor and fuel systems. Types of equipment worked on include but are not limited to motorcycles, snowmobiles and ATVs. Students are encouraged to participate in SkillsUSA (student organization) to enhance their leadership opportunities and compete at both state and national levels.

Articulation credits are available for students choosing to attend Universal Technical Institute after completion of Outdoor Powersports II.

Course Title: OUTDOOR POWERSPORTS II #7015

Program-specific prerequisites: *successful completion of Outdoor Powersports I; continued commitment and interest in further study in the field*

NOTE: afternoon only

Second year Outdoor Powersports students will continue working primarily on snowmobiles, ATVs, and

motorcycles. Class and shop work in this one-year, second-year course will focus on theory and application of basic and advanced electrical systems, fuel injection systems, ignition systems, transmissions and clutches, and suspension systems. More advanced measuring tools will be used.

Articulation credits are available for students choosing to attend Universal Technical Institute.

Course Title: PRE-APPRENTICESHIP PROGRAM #7100

Program-specific prerequisites: *instructor permission, as these are state-registered work/study opportunities; commitment to work in field related to identified career goal*

To be eligible for this one-year, senior-only program, students must be employed or willing to be employed. Pre-Apprenticeship involves planned on-the-job training in areas related to the occupation. The class discussions focus on diverse skills and knowledge as well as maturity and independence of judgment. All the practical and theoretical aspects of the work required in a skilled occupation are covered in detail. Pre-Apprenticeships can lead to a full Maine State apprenticeship, post-secondary education, and/or permanent employment with the participating employer. Through Pre-Apprenticeship, students in many cases will have access to professional skill-level positions with area employers. An opportunity to participate in a skill area not currently offered at Region 10 exists through this program. Pre-Apprenticeship requires the recommendation of your instructor if you are in a Region 10 program your junior year or your school counselor if you are not already enrolled at Region 10.

No dual enrollment credit or articulation agreements are currently in place for this program, although students may qualify for employer or state apprenticeship programs.

COURSE SYLLABI 2021-2022

Mt. Ararat High School Course Syllabus

Academic English I

English • 9 • Full Year • 1 Credit

Course Description

English I is a transitional course designed to further develop the language arts skills, concepts, and practices that students will need to grow as readers and writers throughout high school and beyond. Specifically, students explore how to become critical readers of literary text, including fiction and nonfiction. They also strive to become more effective communicators by sharpening their command of oral and written expression. This involves learning how to use the writing process – planning, drafting, revision, and editing – to produce articulate, well-crafted papers. Progress toward these goals is measured in five required common assessments: (1) analysis of argument, (2) culture reading project, (3) literary analysis of a Shakespearean passage, (4) living history presentation, and (5) thematic essay.

Units of Study w/ Essential Questions

Unit 1: Coming of Age Stories

Essential Question: How do we become who we are?

Shared Reading: *The Outsiders* by S.E. Hinton, selected short stories

Independent Reading: Coming-of-age Novel

Assessment: Character Connection Essay

Unit 2: Poetic Stories

Essential Question: How do people share stories through poetry and song?

Shared Reading: *The Crossover* by Kwame Alexander, selected poems

Independent Reading: Self-selected verse novel, selected poems

Assessment: Poetry Out Loud

Unit 3: Love Stories

Essential Question: Why do we re-tell some stories again and again?

Shared Reading: *Romeo and Juliet* by William Shakespeare

Assessment: Film Analysis project, Close-Reading of Poetic Passage

Unit 4: Stories from the Past

Essential Question: How do we connect to those who have come before?

Shared Reading: *To Kill a Mockingbird* by Harper Lee

Independent Reading: Self-selected biography or historical non-fiction text

Assessment: Living History Project

Unit 5: Stories from the Present

Essential Question: How do stories reflect and shape our culture?

Shared Reading: Young Adult Novel Book Groups, selected articles

Independent Reading: Free choice

Assessment: Socratic Seminar, On-demand Synthesis Essay

Course Learning Goals

- **Reading - How to understand & appreciate what you read**
 1. Determine the themes of a literary text and analyze their development.
 2. Analyze the impact of literary devices/strategies on meaning and tone.
 3. Support your analysis of literary text with evidence and inferences.
 4. Support your analysis of nonfiction text with evidence and inferences.
- **Writing - How to produce a quality piece of writing**
 1. Write clear and cohesive arguments.
 2. Write clear and cohesive informative/explanatory texts.
 3. Write narratives to develop real or imaginary events.
 4. Use the writing process to develop a piece of writing.
 5. Demonstrate command of standard English language conventions (grammar and usage).
 6. Collect, evaluate, and integrate information into a text while avoiding over-reliance on any one source.
- **Speaking & Listening - How to participate effectively in discussions and presentations**
 1. Come to group discussions prepared, having completed the required reading and/or research.
 2. Use oral communication skills to deliver focused and cohesive presentations.
 3. Behave in respectful and supportive ways as an audience member.

Prerequisites

None

Guiding Principle(s)

- A clear and effective communicator
- A self-directed and life-long learner
- A responsible and involved citizen
- An integrative and informed thinker

Assessments

1. Character Connection Paper
2. Poetry Out Loud
3. Thematic Essay on *To Kill a Mockingbird*
4. Fishbowl Discussion on Diverse Perspectives

Resources

A variety of literary and visual resources, including text and film versions of *The Outsiders*, *The Crossover*, *Romeo and Juliet*, *To Kill a Mockingbird*, and selected young adult titles, poetry, and short stories.

Advanced English I

English • 9 • Full Year • 1 Credit

Course Description

This course is intended for ninth graders who demonstrate (1) a strong interest in the study of language, literature, and writing, (2) proficiency in ninth-grade learning goals, and (3) the maturity and academic readiness to engage in an intensive, accelerated program of study. As readers and writers, students consider various literary genres (essays, speeches, poems, fiction, and drama), paying close attention to language features, form, and meaning. Students are expected to read regularly outside of class and to confer with their peers and teacher about their writing. Freshmen who successfully complete this course will be prepared to take Advanced English II in their sophomore year.

Units of Study w/ Essential Questions

Groundwork Unit: Crafting Essential Questions

Essential Question: Students generate their own essential questions about fate.

Shared Reading: *The Other Wes Moore*

Independent Reading: Journey narrative

Assessment: On-demand summer reading essay

Unit 1: Epic Hero Journey

Essential Question: Students generate their own essential questions about fate.

Shared Reading: *The Odyssey* by Homer

Independent Reading: Journey narrative (continued)

Assessments: Test on *The Odyssey*, Personal Hero Journey narrative, Oral history

Unit 2: Speak Up! - Reading, Writing, and Reciting Poetry

Essential Question: How does poetry convey individual voice and vision?

Shared Reading: Selected sonnets

Independent Reading: Novel in verse

Assessments: Poetry Out Loud, Poetry Portfolio, Letters About Literature writing contest

Unit 3: Tragic Hero Journey

Essential Question: Students generate essential questions about *betrayal*.

Shared Reading: *Othello* by William Shakespeare

Independent Reading: Novel in verse

Assessments: On-demand literary analysis, Production Poster group project

Unit 4: Multigenre Exploration - Delving Into Discrimination

Essential Question: Students generate essential questions about *discrimination/prejudice*

Shared Texts: *The Bluest Eye* by Toni Morrison, *A Class Divided* (Frontline video, 1985), essays about discrimination/white privilege

Independent Reading: Reader's choice

Assessments: Multigenre Paper

Unit 5: Book Group Investigations - Probing Perspectives on the Past

Essential Question: Students generate essential questions about *discrimination/prejudice*

Shared Reading: Historical fiction book groups, selected articles

Independent Reading: Reader's choice

Assessments: Socratic Seminar, On-demand Synthesis Essay

Course Learning Goals

- **Reading - How to understand & appreciate what you read**
 1. Determine theme of literary text and analyze its development.
 2. Analyze impact of literary devices/strategies on meaning and tone.
 3. Support analysis of literary text with evidence and inferences.
 4. Support analysis of nonfiction text with evidence and inferences.
 5. Determine the meaning of words in context.
- **Writing - How to produce a quality piece of writing**
 1. Write clear and cohesive arguments.
 2. Write narratives to develop real or imaginary events.
 3. Use the writing process to develop a piece of writing.
 4. Demonstrate command of conventions.
 5. Independently collect, evaluate, and integrate accurate information while avoiding over-reliance on any one source.
- **Speaking & Listening - How to participate effectively in discussions and presentations**
 1. Come to group discussions prepared, having read and researched material.
 2. Use oral communication skills to deliver focused and cohesive presentations.
 3. Behave in respectful and supportive ways as member of an audience.

Prerequisites

None

Guiding Principle(s)

- A clear and effective communicator
- A self-directed and life-long learner
- A responsible and involved citizen
- An integrative and informed thinker

Assessments

1. Personal Hero Journey Narrative
2. Oral History
3. Poetry Out Loud
4. Synthesis Essay
5. Socratic Seminar

Resources

A variety of literary and visual resources, including *The Other Wes Moore*, text and film versions of *The Odyssey* and *Othello*, *The Bluest Eye*, and selected historical fiction titles, essays, poetry, and short stories.

Course Description

Students who successfully complete this course will be prepared to undertake introductory college-level work in subsequent AP English courses. This course is intended for students with strong interest in the study of language, literature, and writing who are ready to do intensive, accelerated work. As readers and writers, students consider various literary genres (essays, speeches, poems, fiction, and drama), paying close attention to language features, form, and meaning. Students complete a major research project and confer regularly with their peers and teacher about their writing.

Units of Study w/ Essential Questions

Unit 1: Dystopian societies

Essential Questions: Can you create a perfect society? What contemporary influences do speculative fiction authors suggest we should be wary of?

Shared Reading: *Fahrenheit 451* by Ray Bradbury (Summer Reading), selected short stories

Reading Group Selections: *1984* by George Orwell, *The Handmaid's Tale* by Margaret Atwood, *Brave New World* by Aldous Huxley

Assessment: Socratic Seminar, Dystopian Short Story Analysis

Unit 2: Literature and the Human Experience

Essential Question: What can short stories and poetry reveal to us about the human experience?

Shared Reading: Selected short stories and poems

Independent Reading: Self-selected

Assessment: Poetry Out Loud, Critical Literary Analysis

Unit 3: Shakespeare and Poetry

Essential Question: How does the work of William Shakespeare influence our language and culture?

Shared Reading: *The Tempest* by William Shakespeare and selected poems and short stories

Independent Reading: Self-selected

Assessment: Shakespearean Film Analysis Project, Passage Analysis

Unit 4: Civilization and Savagery

Essential Questions: How do we behave when no one is watching? What is more powerful, nature or nurture?

Does absolute power corrupt absolutely? Does humanity need government to live peacefully?

Reading Group Selections: *Animal Farm* by George Orwell, *Lord of the Flies* by William Golding

Assessment: Propaganda Project

Unit 4: I-Search

Essential Question: What important and controversial topic in the world today would I like to learn more about?

Independent Reading: Self-selected biography or historical non-fiction text related to your research

Assessment: I-search paper and presentation

Unit 5: Power and Privilege

Essential Questions: How does society marginalize certain individuals and groups? What can we learn from the stories of the oppressed?

Reading Group Selections: *A Thousand Splendid Suns*, *How the Garcia Girls Lost Their Accents*, *Purple Hibiscus*, *The Joy Luck Club*, *The Secret Life of Bees*

Assessment: Group Project and Presentation

Course Learning Goals

- **Reading - How to understand & appreciate what you read**
 1. Determine themes of a grade-appropriate text and analyze its development in detail.
 2. Determine central ideas of a grade-appropriate text and analyze their development.
 3. Support analysis of grade-appropriate non-fiction text with textual evidence and citations.
 4. Support analysis of grade-appropriate literary text with textual evidence and citations.
 5. Analyze the impact of literary devices and strategies on meaning and tone in grade-appropriate texts
- **Writing - How to produce a quality piece of writing**
 1. Write clear and cohesive arguments using valid reasoning and appropriate evidence.
 2. Write clear and cohesive informative/explanatory texts to examine and convey complex ideas, concepts, and information
 3. Use the skills and strategies of the writing process including pre-drafting, drafting, and revising based on feedback.
 4. Demonstrate command of the conventions of standard English grammar and usage when writing.
 5. Collect, evaluate, and integrate information into a coherent text.
 6. Employ the conventions of MLA formatting and citations.
- **Speaking & Listening - How to participate effectively in discussions and presentations**
 1. Behave in respectful and supportive ways as members of an audience.
 2. Adapt presentation style to appropriate contexts and tasks.

Prerequisites

Academic or Advanced English I

Guiding Principle(s)

- A clear and effective communicator
- A self-directed and life-long learner
- A responsible and involved citizen
- An Integrative and informed thinker

Assessments

1. Socratic Seminar
2. Poetry Out Loud
3. Literary Analysis Paper
4. Shakespeare Passage Analysis
5. Shakespeare Film Analysis
6. Propaganda Project
7. I-Search Paper and Presentation
8. Project and Presentation

Resources

A variety of literary and visual resources for individual and shared reading, including text and film versions of *Fahrenheit 451*, *1984*, *Brave New World*, *The Handmaid's Tale*, *The Tempest*, *Animal Farm*, *Lord of the Flies*, *A Thousand Splendid Suns*, *How the Garcia Girls Lost Their Accents*, *Purple Hibiscus*, *The Joy Luck Club*, *The Secret Life of Bees*, and other selected novels, poetry, and short stories.

Mt. Ararat High School Course Syllabus

Language & Literature: Crime

English • 11/12 • 1 Semester • 0.5 Credit

Course Description

Are you interested in the psychology behind what causes someone to commit an unthinkable crime? Would you like to explore the differences between nature and nurture, good and evil? In this class, students will analyze various aspects of crime and also examine the criminals who commit them. Students will read a wide variety both fiction and nonfiction as they look to gain a comprehensive understanding of crime and its place in society.

Units of Study w/ Essential Questions

Unit 1: Fiction Short Stories

Essential Question: How do authors build suspense using elements of narration?

Assessments:

- Short Crime Story

Unit 2: Nonfiction Book Groups

Essential Question: Are criminals made or born?

Assessments:

- Argument Paper: Nature vs. Nurture - the making of a criminal

Unit 3: *Macbeth*

Essential Question: Who bears the most responsibility for the tragedy of *Macbeth*?

Assessments:

- Mock Trial

Unit 4: Research

Essential Question: What causes someone to commit an unthinkable crime?

- Assessments: Criminal Profile Project and Research

Course Learning Goals

- **Reading - How to understand & appreciate what you read**
 1. Determine central idea of a text and analyze its development
 2. Support textual analysis of grade-appropriate non-fiction text with textual evidence and citations.
 3. Support analysis of nonfiction text with evidence and inferences

- **Writing - How to produce a quality piece of writing**
 1. Write clear and cohesive arguments
 2. Acknowledge and refute counterclaim
 3. Write narratives to develop real or imaginary events
 4. Use the writing process to develop a piece of writing
 5. Demonstrate command of conventions
 6. Collect, evaluate, and integrate information into a coherent text while avoiding over-reliance on any one source.
- **Speaking & Listening - How to participate effectively in discussions and presentations**
 1. Come to group discussions prepared, having read and researched material.
 2. Use oral communication skills to deliver focused and cohesive presentations.
 3. Behave in respectful and supportive ways as a member of an audience.

Prerequisites

Successful completion of 9th and 10th grade English

Guiding Principle(s)

- Clear and effective communicator
- Self-directed and lifelong learner
- Creative and practical problem solver
- Responsible and involved citizen
- Integrative and informed thinker

Assessments

- Short Crime Story
- Argument Paper: Nature vs. Nurture - the making of a criminal
- Mock Trial
- Criminal Profile Project and Research

Resources

- *Macbeth* by William Shakespeare
- *In Cold Blood* by Truman Capote
- *I'll Be Gone in the Dark* by Michelle McNamara
- *The Devil in the White City: Murder, Magic, and Madness at the Fair that Changed America* by Erik Larson
- *The Night Thoreau Spent in Jail* by Robert E. Lee and Jerome Lawrence
- *Lamb to the Slaughter* and *The Landlady* by Roald Dahl
- *The Devil and Daniel Webster* by Stephen Vincent Benet

Course Description

Students often ask why we always read books about sadness and adversity in English classes. Readers throughout history have always been drawn to fictional stories of adversity that allow them to confront their fears, face their personal demons, and feel the strength of those who emerge from trauma, dangers, and darkness in triumph. Consequently, many of the most notable works of fiction are centered on protagonists who follow this path.

Memoir is not biography; memoir is not reporting; memoir inhabits a magical space between fiction and nonfiction. Memoir writing uses fiction devices such as dialogue, sensory language, setting, and character development, while also telling a true story about the writer in a personal manner. Readers of memoir often find a friend and solace in these deeply personal stories. Writers of memoirs are compelled to tell their story, the one only they can tell, in order to share examples of perseverance, recovery, survival, and redemption.

In this class, we will explore stories of adversity, both fictitious and true, and the impact they have on us as individuals and on society.

Units of Study w/ Essential Questions

Unit 1: Overcoming Adversity in Children's Literature

Essential Questions: How does adversity shape an individual? How do stories about adversity influence the reader?

Shared Reading: *Harry Potter and the Cursed Child* by J.K. Rowling

Independent Reading: Selected Children's Stories

Assessment: Multimedia Project

Unit 2: Overcoming Adversity in Literary Fiction

Essential Questions: Why do we seek to learn from fictional stories of adversity? Why does so much literature focus on adversity?

Reading Selections: *Turtles All the Way Down* by John Green, *The Kite Runner* or *A Thousand Splendid Suns* by Khaled Hosseini, *Orphan Train* by Christina Baker Kline

Assessment: Literary Analysis Essay

Unit 3: Overcoming Adversity in Memoir

Essential Questions: How does adversity shape an individual? How is memoir writing a story about yourself only you can tell? Does everything in a memoir need to be true?

Reading Selections: *The Glass Castle* by Jeannette Walls, *Educated* by Tara Westover, *Hillbilly Elegy* by J.D. Vance, *A Long Way Gone* by Ishmael Beah, *Fun Home: A Family Tragicomic Book* by Alison Bechdel

Assessment: Creative Writing Memoir

Course Learning Goals

- **Reading - How to understand & appreciate what you read**
 1. Support analysis of literary text with evidence and inferences.
 2. Determine theme of literary text and analyze its development.
 3. Analyze impact of literary devices/strategies on meaning and tone.
 4. Support analysis of literary text with evidence and inferences.
- **Writing - How to produce a quality piece of writing**
 1. Write narratives to develop real or imaginary events
 2. Collect, evaluate, and integrate information into a narrative while avoiding over-reliance on any one source.
- **Speaking & Listening - How to participate effectively in discussions and presentations**
 1. Come to group discussions prepared, having read and researched material.
 2. Use oral communication skills to deliver focused and cohesive presentations

Prerequisites

Successful completion of 9th and 10th grade English

Guiding Principle(s)

- Clear and effective communicator
- Self-directed and lifelong learner
- Creative and practical problem solver
- Responsible and involved citizen
- Integrative and informed thinker

Assessments

- Children’s Literature Analysis Project
- Literary Analysis
- Memoir Creative Writing Paper
- Multimedia Film Project

Resources

Course materials will be selected from among the following:

Harry Potter and the Cursed Child by J.K. Rowling

Selected Children’s stories

Turtles All the Way Down by John Green

The Kite Runner or *A Thousand Splendid Suns* by Khaled Hosseini

Orphan Train by Christina Baker Kline

The Glass Castle by Jeannette Walls

Educated by Tara Westover

Hillbilly Elegy by J.D. Vance

A Long Way Gone by Ishmael Beah

Fun Home: A Family Tragicomic Book by Alison Bechdel



Language & Literature: Media & Visual Literacy

English • 11/12 • 1 Semester • 0.5 Credit

Course Description

Photographs, advertisements, maps, websites, television programs and movies, artwork: we are constantly “reading” non-print texts for meaning. This course will provide the opportunity to consider the visual messages being broadcast through understanding and evaluating the purpose, author, subject, medium and

genre, composition, audience, and context which shapes those texts' meanings. Students can expect regular analytical writing in response to the views texts. Students will also design a series of projects in selected types of non-print texts (e.g. advertisements, book covers, film trailers, and maps) using software available on MLTI laptops to demonstrate knowledge of the principles of visual literacy in a hands-on way.

Units of Study w/ Essential Questions

- **Communication through Design**
 - How does graphic design help convey information effectively?
 - Create new syllabus for class
 - Evaluating templates for presentation
 - What choices do designers make to assist their audience's understanding?
 - How do symbols communicate information differently than language?
 - Visual organization project w/written analysis
 - How do images become iconic and symbolic?
 - Who has control of the meaning of a symbol?
 - Google image search: for "correct" image

- **Juxtaposition and Sequencing**
 - How do placement, size and proximity affect the reading of an image?
 - How is sequencing of images important?
 - Storyboarding
 - Generating written instructions -> transform to visual instructions
 - Analysis of movie sequence
 - How can the juxtaposition of language and image augment the meaning of each?
 - How can one manipulate meaning through selection of image? And text?
 - New Yorker cartoon caption creation
 - Meme creation/analytical response
 - How do images represent self?
 - Photo-based memoir writing
 - Character-based Facebook page
 - How can breaking selective rules be effective?

- **Visual Argument**
 - What makes an image trustworthy?
 - Matthew Brady civil war photos
 - First-impression memes
 - What manipulative techniques to advertisers use?
 - Adbusters
 - How do book covers visually convey interest? Movie posters?
 - Generate new designs
 - How can maps mislead and make assumptions?
 - One map-focused information
 - How can data be represented? Misrepresented?
 - How can media use persuasion without our knowledge?
 - Selection of image
 - Comparison of political news sites

- **Film Analysis**
 - What are the rules of different film genres?
 - How does what we expect from a genre affect our reading of a film?
 - How is pictorial composition an important element of storytelling?
 - How does editing affect an audience's experience of the narrative?
 - How do editing and lighting and sound augment the mood of a film?

- How do you decide which tool to employ to create the desired effect on an audience?
- How do “reboots” make adjustments for new audiences?

Course Learning Goals

- **Reading - How to understand & appreciate what you read**

5. Understand that images are messages that are deliberately constructed with economic, political, social, and aesthetic purposes
6. Analyze the elements of a single image (photograph, chart/graph, artwork, advertisement, map)
7. Analyze the elements of a series of images (graphic novel, photo series, movie scene)
8. Analyze the ways in which context and juxtaposition of text and image affect the message

- **Writing - How to produce a quality piece of writing**

3. Write critically about the ways in which visual images communicate
4. Construct deliberate messages with economic, political, social, and aesthetic purposes and reflect on choices made within their own work

- **Speaking & Listening - How to participate effectively in discussions and presentations**

3. Write critically about the ways in which visual images communicate
4. Select and consciously use technology for creation of clear, effective communications, mindful of audience

Prerequisites

Successful completion of 9th and 10th grade English

Guiding Principle(s)

- Clear and effective communicator
- Self-directed and lifelong learner
- Creative and practical problem solver
- Responsible and involved citizen
- Integrative and informed thinker

Assessments

- Analyze a piece of text for important details and generate a reformatted version with an eye for emphasis and readability
- Analyze one photograph from Pulitzer winners detailing its elements and how message is deliberately constructed; include discussion of effect of caption
- Memoir writing based on photographic image
- Synthesis essay building a position of the meaning of beauty in 21st century America
- In partners, students choose one 3-4 minute clip of a movie, sketch out storyboard of major shifts in camera, analyze how this movement affects our response to sequence

Resources

Course materials will be selected from among the following:

Books:

How to See, George Nelson

Ways of Seeing, John Berger

Picturing Texts, Lester Fagley

The Non-Designers Design Book, Robin Williams

The Non-Designers Presentation Book, Robin Williams

Understanding Comics, Scott McCloud

Films:

Art & Copy, Doug Pray

"The Camera Lies 24 Times per Second", Brian DePalma

Koyaanasqatssi, Godfrey Reggio

Many short clips including selections from: *300*, *Jaws*, "Symmetry" Radiolab, Assorted popular commercials and advertisements

Mt. Ararat High School Course Syllabus

Language & Literature: Research

English • 11/12 • 1 Semester • 0.5 Credit

Course Description

The centerpiece of this course is research. Students will develop skills to refine search queries in order to get valid, appropriate and accurate research results. Students will evaluate information found in your sources on the basis of accuracy, validity, appropriateness for needs, importance, and social and cultural context. Students will gather information that is relevant to the particular lens for which they are focusing their research. The student student throughout the course will demonstrate they know how to respect the intellectual property rights of creators and producers by using citations correctly. Ultimately students will sharpen their information gathering skills and synthesize various opinions into an informed conclusion during a major research project culminating into a formal academic paper.

*Note: this is a required course for graduation

Units of Study w/ Essential Questions**Unit 1: Finding Your Sources**

Essential Questions

- What ways are you able to access information through electronic and print resources?
- What ways are you able to evaluate information for quality and relevance?
- What ways are you able to evaluate information for authority and currency, as well as for coverage and depth?

Resources: Internet, Maine Digital Library, textbook (TBD)

Assessment: Research process

Unit 2: Organize and Refine Information

Essential Questions

- What ways are you able to manage information using different organizational techniques and tools?
- What ways are you able to use information in order to limit and/or focus the topic?

Resources: Internet, informational handouts, MLA handbook, Maine Digital Library, textbook

Assessment: Argument essay

Unit 3: Putting it All Together on Paper

Essential Questions

- What ways are you able to quote, summarize, and paraphrase correctly?
- What ways are you able to build a position using supporting research and integrating source material?
- What ways are you able to document giving credit to sources within the paper according to MLA standards?
- What ways do you know how to avoid plagiarism accurately?

Resource: Internet, informational handouts, MLA handbook, Maine Digital Library, textbook

Assessment: Synthesis essay

Unit 4: The Presentation

Essential Questions

- What ways are you able to deliver your message and information to create a cohesive presentation?
- What ways are you able to engage your listener to respond and interact with your information?

Resources: Internet, various informational handouts

Assessment: Presentation

Course Learning Goals

- ***Reading - How to understand & appreciate what you read***
 1. Support analysis of grade-appropriate nonfiction text with textual evidence.
- ***Writing - How to produce a quality piece of writing***
 1. Write clear and cohesive arguments using valid reasoning and appropriate evidence.
 2. Write clear and cohesive informative/explanatory texts to examine and convey complex ideas, concepts, and information.
 3. Use the skills and strategies of the writing process including pre-drafting, drafting, and revising based on feedback.
 4. Demonstrate command of the conventions of standard English grammar and usage when writing.
 5. With guidance, collect, evaluate, and integrate information into a coherent text.
 6. Employ the conventions of MLA formatting and citations.
- ***Speaking & Listening - How to participate effectively in discussions and presentations***
 1. Adapt presentation style to appropriate contexts and tasks.
 2. Behave in respectful and supportive ways as members of an audience.
 - 3.

Prerequisites

Successful completion of 9th and 10th grade English

Guiding Principle(s)

- Clear and effective communicator
- Self-directed and lifelong learner
- Creative and practical problem solver
- Responsible and involved citizen
- Integrative and informed thinker

Assessments

- Research process
- Various presentations
- Argument essay

- Synthesis essay

Resources

Course textbook or handbook TBD

Learning Commons - Maine Digital Library

Mt. Ararat High School Course Syllabus

Language & Literature: Voices of the American Dream

English • 11/12 • 1 Semester • 0.5 Credit

Course Description

In this American Literature class, students will study works of prose, poetry, drama, and fiction in relation to their historical and cultural contexts. Texts will be selected from among a diverse group of authors for what they reflect and reveal about the evolving American experience and character, with an emphasis on the difficulties of living at the fringes of American culture with the promise of a Great American Dream.

Units of Study w/ Essential Questions

Unit 1: Poetry and Prose

Essential Question: How does cultural background impact an individual's ability to achieve their notions of the American Dream?

Assessments: Personal belief narrative

Unit 2: Drama

Essential Question: How does the American Dream affect the daily lives of Americans?

Assessments: Performance of a great American speech

Unit 3: Novel

Essential Questions: Can the American Dream be universally achieved or is it inherently inaccessible? How has the idea/definition of the American Dream changed throughout American history?

Assessments: Novel analysis paper

Course Learning Goals

- **Reading - How to understand & appreciate what you read**
 1. Analyze impact of literary devices/ rhetorical strategies on meaning and tone.
 2. Support analysis of literary text with evidence and inferences.
 3. Determine theme of literary text and analyze its development.
- **Writing - How to produce a quality piece of writing**
 1. Write narratives to develop real or imaginary events
 2. Use the writing process to develop a piece of writing
 3. Demonstrate command of conventions
- **Speaking & Listening - How to participate effectively in discussions and presentations**
 1. Come to group discussions prepared, having read and researched material.
 2. Use oral communication skills to deliver focused and cohesive presentations.

Prerequisites

Successful completion of 9th and 10 grade English

Guiding Principle(s)

- Clear and effective communicator
- Self-directed and lifelong learner
- Creative and practical problem solver
- Responsible and involved citizen
- Integrative and informed thinker

Assessments

- Personal belief narrative
- Performance of a great American speech
- Novel analysis paper

Resources

Course materials will be selected from among the following:

A Raisin in the Sun by Lorraine Hansbury

The Great Gatsby by F. Scott Fitzgerald

Catcher in the Rye by J.D. Salinger

Death of a Salesman by Arthur Miller

Fences by August Wilson

Langston Hughes

Emma Lazarus

Sylvia Plath

Ted Talks: The New American Dream and A Different American Dream by Courtney E. Martin



Mt. Ararat High School Course Syllabus

Language & Literature: Writing in the Real World

English • 11/12 • 1 Semester • 0.5 Credit

Course Description

Writing in the Real World engages students in writing for real-world purposes. We develop and apply writing skills to a range of authentic tasks that students are likely to encounter in their personal and professional lives - including job applications, consumer reviews, and letters to the editor. Beyond its importance to academic success, the ability to write well is the cornerstone of adult literacy. Authentic modeling and mentor texts provide essential guidance as students practice and go public with writing in the real world.

Units of Study w/ Essential Questions

Unit 1: Inform and Explain

Essential Question: How do we use writing to achieve personal and professional goals?

Assessments:

- Applications - job/resume/cover letter
- Workplace writing - emails/proposals/estimates
- Article of the week - Why Should I Care?

Unit 2: Evaluate and Judge

Essential Question: How do we use writing to make and justify important decisions?

Assessments:

- Product/candidate comparison and recommendation
- Writing consumer reviews online
- Article of the week - Why Should I Care?

Unit 3: Taking a Stand/Proposing a Solution

Essential Question: How do we use writing to advocate for ourselves and others?

Assessments:

- Debate about current topic using four-square argument chart
- Op-ed/letter or email to the editor or elected representative
- Article of the week - Why Should I Care?

Course Learning Goals

- ***Reading - How to understand & appreciate what you read***
 1. Determine central ideas of a grade-appropriate text and analyze their development.
 2. Support analysis of nonfiction text with evidence and inferences.
 3. Analyze impact of literary devices/ rhetorical strategies on meaning and tone.
- ***Writing - How to produce a quality piece of writing***
 1. Write clear and cohesive arguments.
 2. Write clear and cohesive informative / explanatory texts.
 3. Use the writing process to develop a piece of writing.
 4. Demonstrate command of standard English language conventions (grammar and usage).
 5. Acknowledge and refute counterclaims.
 6. Independently collect, evaluate, and integrate information into a coherent text.
- ***Speaking & Listening - How to participate effectively in discussions and presentations***
 1. Use oral communication skills to deliver focused and cohesive presentations.
 2. Behave in respectful and supportive ways as an audience member.

Prerequisites

Successful completion of 9th and 10th grade English

Guiding Principle(s)

- Clear and effective communicator
- Self-directed and lifelong learner
- Creative and practical problem solver
- Responsible and involved citizen
- Integrative and informed thinker

Assessments

- Applications - job/resume/cover letter
- Workplace writing - emails/proposals/estimates
- Product/candidate comparison and recommendation
- Writing online consumer reviews
- Debate about current topic using four-square argument chart
- Op-ed/letter or email to the editor or elected representative
- Article of the week - Why Should I Care?

Resources

A variety of nonfiction and visual resources (mentor texts) for individual and shared readings

SMCC English IV Composition

English • 12 • Full Year • 1 Credit

Course Description

English Composition is the introduction to college writing across the curriculum. In addition to any necessary review of grammar, sentence structure, and paragraph composition, this course covers the writing of academic essays and research papers in several rhetorical modes. We will work on exploring and analyzing both fiction and non-fiction, short stories and full length novels. Emphasis will be placed upon writing multiple drafts with required revising, rewriting and editing, as well as close reading and critical thinking as literacy tools. Your participation in class discussion is imperative to your success in this course.

Units of Study w/ Essential Questions

Memoir/Informative Text

- Why are students unsuccessful in post-secondary education/life after high school?
- How do current societal expectations contribute to our development?
- What are current real world issues that we are facing and how do they impact us?

Fiction/Literary Analysis/Short Stories/Book Groups

- How do different cultures contribute to the understanding of our own?
- What is an author's meaning as viewed through a particular technique?
- What are common themes across short stories/novels?
- What messages do authors have for us in their writing?

What's True? Vietnam War Unit

- How can we differentiate between truth and fact in a piece of autobiographical fiction?
- What is the power of storytelling?
- What is the role of morality in war?
- How does the Vietnam war continue to impact society?
- What is a truth about war?
- How does analyzing various genres help provide an enhanced perspective of a topic?

The American Dream

- How do the main themes in *Death of a Salesman* still exist in current society?
- Does financial success always mean happiness?
- What are the implications of working your life away?

Senior Paper/Culminating Synthesis

- What is a gap that you perceive in your education and how can you fill it?
- How can you demonstrate what you have learned about reading, writing and research in a cohesive, nuanced whole?
- What are the essential skills that you need for work, college or the military?

Course Learning Goals

1. Determine themes of a grade-appropriate text and analyze their development. ENGLA.12.ELA1.03.01
2. Determine central ideas of a grade-appropriate text and analyze their development. ENGLA.12.ELA1.04.01
3. Support textual analysis of grade appropriate literary text with textual evidence and citations. ENGLA.12.ELA2.02.01
4. Support textual analysis of grade appropriate nonfiction text with textual evidence and citations. ENGLA.12.ELA2.3.1
5. Write clear and cohesive arguments to support claims by synthesizing multiple sources. ENGLA.12.ELA3.02.01
6. Acknowledge and refute counterclaim. ENGLA.12.ELA3.03.01
7. Write clear and cohesive informative/explanatory texts to examine and convey complex ideas, concepts, and information across multiple media. ENGLA.12.ELA4.01.01
8. Can use elaboration and description to develop relationships between character, setting, and theme, and to effectively pace the plot. ENGLA.12.ELA4.02.01
9. Use the skills of the writing process including pre-drafting, drafting, and revising based on feedback. ENGLA.12.ELA5.01.01
10. Independently collect, evaluate, and integrate information into a coherent text. ENGLA.12.ELA6.01.01
11. Employ the conventions of MLA formatting and citations. ENGLA.12.ELA6.2.1
12. Initiate and participate effectively in a range of collaborative discussions. ENGLA.12.ELA7.01.01
13. Present thoughts, feelings, knowledge, and opinions both formally and informally in front of audiences and in well crafted presentations. ENGLA.12.ELA8.01.01
14. Behave in respectful and supportive ways as members of an audience. ENGLA.12.ELA8.02.01

Prerequisites

- Evidence-based Reading & Writing PSAT score of at least 500
- Teacher recommendation

Guiding Principle(s)

- Clear and effective communicator
- Self-directed and lifelong learner
- Creative and practical problem solver
- Responsible and involved citizen
- Integrative and informed thinker

Assessments

- A first writing sample based on available writing prompts within the first three weeks of the semester
- 4-6 essays of **at least** 750-1000 words in these rhetorical modes: Persuasion/Argument, Comparison/Contrast, Literary Review/Analysis, Synthesis.
- Multiple drafts (2 to 3) of any of the above papers; conferences with teacher required

- Research synthesis papers, at least one short and one long, including The Senior Paper required for course credit and graduation at MTA.
- Multiple book quizzes/tests.
- Graded discussion.
- Various group presentations.

Resources

- *Models for Writers*, 9th Edition
- *Pocket Style Manual*
- <https://my.smccme.edu/ics/>
- *Hillbilly Elegy*
- *The Kite Runner*
- *Death of a Salesman*
- *The Things They Carried*
- Self-selected book group novel
- Self-selected senior paper book
- Various non-fiction supplemental articles
- *Gran Torino*, *Two Days in October*, *Apocalypse Now*
- Poems & short memoirs

Mt. Ararat High School Course Syllabus

Literacy Workshop

English • 9 • 1 semester • 0.5 Credit

Course Description

Students are referred to this course based on both interest and/or a need for literacy support. It has been designed to meet students' individual needs in reading fluency, reading comprehension, and writing. Students will learn how to improve their reading habits, reflect on their abilities, and set specific literacy goals. Course work involves support from a Literacy Specialist, one-on-one reading and writing conferences with the instructor, a workshop environment, book clubs with peers, modeling of effective reading and writing strategies and practices, in-class reading sessions, choice in reading material, and practice writing a variety of texts.

Units of Study w/ Essential Questions

Throughout the course, students will work on a number of reading and writing strategies. Strategies that will receive significant class time are:

1. Individual goal setting
Essential question: Why is it important to set goals around reading and writing?
2. Setting a purpose
Essential question: Why is it important to set a purpose before reading?
3. Rules of Notice
Essential questions: How do authors use the Rules of Notice to guide the reader, and why is it important for the reader to recognize them?
4. Summarizing

- Essential questions: What is the best strategy for summarizing a fiction text? What is the best strategy for summarizing a nonfiction text?
5. Character analysis
Essential question: How do the choices an author makes when writing a character affect how the reader feels about the character and the story?
 6. Text talk
Essential question: Why is it useful to “talk to the text” while reading?
 7. Writers’ Workshop:
Essential questions: How do writers make decisions about what to include in their writing?
How do writers construct writing that gets their point across, and that people want to read?

Course Learning Goals

Students will learn and practice a variety of strategies to help them:

1. Determine themes of a grade-appropriate text and analyze its development in detail.
2. Analyze the impact of literary devices and strategies on meaning and tone in grade-appropriate texts.
3. Support analysis of grade-appropriate literary and nonfiction texts with textual evidence.
4. Determine the meaning of words as they are used in a text.
5. Write clear and cohesive texts in a variety of genres.
6. Use the skills and strategies of the writing process including pre-drafting, drafting, and revising based on feedback.
7. Participate in discussions as prepared and respectful members of the group.

Prerequisites

Students who need additional support in reading and writing

Guiding Principle(s)

- Self-directed and lifelong learner
- Clear and effective communicator

Assessments

1. STAR test
2. Curriculum Embedded Reading Assessments
3. Text-based writing assignments

Resources

Students will read a variety of articles, short stories, and independent choice books (fiction and nonfiction).

Course Description

Health means more than just the absence of illness. Your personal health affects everything about you and impacts all aspects of your life such as your relationships, career goals, attitudes, successes, etc. This course is designed to help teens not only survive, but also thrive in a challenging world as they study the various dimensions of health.

Units of Study w/ Essential Questions

Personal wellness/dimensions of health

- Mental health
- Healthy Sexuality
- Substance abuse
- Nutrition

Essential Questions

- How do the dimensions of health interrelate with one another?
- How do behaviors impact self & others?
- What are the skills of an effective communicator?
- How can some health risk behaviors influence the likelihood of engaging in unhealthy behaviors?

Course Learning Goals

1. Analyze the interrelationships of physical, mental/intellectual, emotional and social health.
2. Explain causes of common diseases, disorders, and other health problems and propose ways to reduce, prevent or treat them.
3. Analyze and describe how genetics and family history can impact personal Health.
4. Analyze complex health concepts related to personal and mental health, disease prevention, sexuality, alcohol and other drug use prevention.
5. Demonstrate healthy practices/behaviors to maintain or improve the health of self and others.
6. Design, implement and evaluate a plan for stress management.
7. Analyze how some health risk behaviors can influence the likelihood of engaging in unhealthy behaviors such as drug and alcohol use.
8. Utilize effective communication skills with family, peers and others to enhance health.
- 9.

Prerequisites

None required

Guiding Principle(s)

- Clear & effective communicator
- Self-directed & lifelong learner
- A responsible & involved citizen
- A creative & Practical problem solver

Assessments

- Assessment for each learning goal
- Unit assessments

Resources

- Various Youtube clips
- Glencoe Health book
- Maine family planning
- NAMI
- Lifeline resources

Foundations in Algebra I

Math • 9 • Full Year • 1 Credit

Course Description

This course allows students to strengthen their understanding of Pre-Algebra concepts while studying topics in Algebra I. Students will have the opportunity to work with solving equations and inequalities in one variable, simplifying algebraic expressions, properties of exponents, linear equations and graphs. This course also includes integrated topics in geometry and statistics.

Units of Study w/ Essential Questions

Language and Tools of Algebra

How are the properties of real numbers and algebraic symbols used to express relationships and solve real-world problems?

Solving Linear Equations

How are linear equations useful in representing mathematical relationships?

Functions and Patterns

How can functions be used to solve practical problems and represent real world situations algebraically and graphically?

Analyzing Linear Equations

What are the different forms of linear equations, and how does changing between forms aid in analyzing the linear relationship graphically.

Solving Systems of Linear Equations

How are systems of equations solved algebraically and then used graphically to represent situations, solve problems and apply to real world questions?

Polynomials

How are rules of exponents applied to mathematical operations involving polynomials?

Statistics and Probability

How is statistics and probability used to model, analyze, and interpret mathematical relationships?

Course Learning Goals

1. Maintain fluency in the addition, subtraction, multiplication, and division of rational numbers.
2. Reason quantitatively, create expressions and solve equations that model real-life mathematical problems.
3. Understand the structure of expressions and use foundational skills to write, simplify and apply properties of operations to algebraic expressions.
4. Analyze linear equations and understand the process of reasoning associated with creating and solving them in one variable.
5. Represent and solve linear equations graphically and understand the connections between lines and their equations.

6. Solve systems of equations by graphing, substitution, elimination and apply these methods to solve real-life mathematical problems.
7. Perform basic arithmetic operations on monomials and polynomials.
8. Understand the concept of a function, to include the representation of functions using tables, graphs, mappings and basic function notation.
9. Use basic graphical and numerical techniques to analyze data in one and two variables and make inferences to justify conclusions.

Prerequisites

None

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response
- Sees opportunities, finds resources and seeks results
- Uses information and technology to solve problems
- Perseveres in challenging situations

An integrative and informed thinker who:

- Gains and applies knowledge across disciplines and learning contexts and to real-life situations with and without technology
- Evaluates and synthesizes information from multiple sources
- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Mid-Chapter and Chapter Assessments; Midterm and Final Exams.

Resources

Algebra 1, Glencoe McGraw-Hill, Chapters 1-5, 7, 12



Mt. Ararat High School Course Syllabus

Academic Algebra I

Math • 9 • Full Year • 1 Credit

Course Description

This course includes topics in algebra such as solving equations and inequalities in one variable, exponents and radicals, radical expressions, linear equations in two variables, and quadratic equations. The course also integrates topics from geometry, probability and statistics. Reading and problem solving are emphasized throughout the course.

Units of Study w/ Essential Questions

Language and Tools of Algebra

How are the properties of real numbers and algebraic symbols used to express relationships and solve real-world problems?

Solving Linear Equations

How are linear equations useful in representing mathematical relationships?

Functions and Patterns

How can functions be used to solve practical problems and represent real world situations algebraically and graphically?

Analyzing Linear Equations

What are the different forms of linear equations, and how does changing between forms aide in analyzing the linear relationship graphically.

Solving Systems of Linear Equations

How are systems of equations solved algebraically and then used graphically to represent situations, solve problems and apply to real world questions?

Solving Linear Inequalities

How are linear inequalities and systems of linear inequalities used to represent and analyze mathematical relationships?

Polynomials

How are rules of exponents applied to mathematical operations involving polynomials?

Factoring

How is factoring related to breaking apart polynomials, and how is it used in solving quadratic equations?

Statistics and Probability

How is statistics and probability used to model, analyze, and interpret mathematical relationships?

Course Learning Goals

1. Maintain fluency in the addition, subtraction, multiplication, and division of rational numbers.
2. Reason quantitatively, create expressions and solve equations that model real-life mathematical problems.
3. Understand the structure of expressions and use foundational skills to write, simplify and apply properties of operations to algebraic expressions.
4. Analyze linear equations and understand the process of reasoning associated with creating and solving them in one variable.
5. Represent and solve linear equations graphically and understand the connections between lines and their equations.
6. Solve systems of equations by graphing, substitution, elimination and apply these methods to solve real-life mathematical problems.
7. Analyze linear inequalities algebraically and graphically and understand the process of reasoning associated with creating and solving them in one variable.
8. Perform basic arithmetic operations on monomials and polynomials.
9. Understand the process of factoring as the inverse of multiplying and use it to generate equivalent expressions and to solve algebraic equations.

10. Understand the concept of a function, to include the representation of functions using tables, graphs, mappings and basic function notation.
11. Use basic graphical and numerical techniques to analyze data in one and two variables and make inferences to justify conclusions.

Prerequisites

None

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response
- Sees opportunities, finds resources and seeks results
- Uses information and technology to solve problems
- Perseveres in challenging situations

An integrative and informed thinker who:

- Gains and applies knowledge across disciplines and learning contexts and to real-life situations with and without technology
- Evaluates and synthesizes information from multiple sources
- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Chapter Assessments; Midterm and Final Exams.

Resources

Algebra 1, Glencoe McGraw-Hill, Chapters 1-8, 12



Mt. Ararat High School Course Syllabus

Academic Algebra II

Math • 11 • Full Year • 1 Credit

Course Description

This course is intended for students who have demonstrated a sound understanding of the concepts studied in previous mathematics courses. There will be more emphasis on the structure of mathematics than in the Algebra II course. Topics such as trigonometry, logarithms, exponents, and complex numbers will be included.

Units of Study w/ Essential Questions

Analyzing Equations and Inequalities

What are the steps to solve algebraic equations and inequalities and how are they used to model,

analyze, and interpret mathematical relationships?

Graphing Linear Relations and Functions

What are the steps to graph linear relations and how are they used to represent mathematical relationships?

Solving Systems of Linear Equations and Inequalities

What are the steps to solve systems of linear equations and inequalities and how are they used to model, analyze, and interpret mathematical relationships?

Exploring Polynomials and Radical Expressions

How are polynomial operations and radical expressions used to model, analyze, and interpret mathematical relationships?

Exploring Quadratic Functions

How are quadratic functions used to model, analyze, and interpret mathematical relationships and model real-world problems and their solutions?

Analyzing Conic Sections

How are circles used to model, analyze, and interpret mathematical relationships?

Exploring Polynomial Functions

How are polynomial functions used to model, analyze, and interpret mathematical relationships and model real-world problems and their solutions?

Exploring Rational Expressions

How are rational functions used to model, analyze, and interpret mathematical relationships and model real-world problems and their solutions?

Course Learning Goals

1. Extend skills in reasoning quantitatively, creating expressions and solving equations that model real-life linear, quadratic and exponential problems.
2. Perform basic arithmetic operations on complex numbers.
3. Maintain fluency and extend skills in analyzing linear equations and inequalities and understand the reasoning associated with creating and solving them in one variable.
4. Maintain fluency and extend skills in solving systems of equations and inequalities by graphing, substitution, elimination and apply these methods to solve real-life mathematical problems.
5. Apply arithmetic operations and the properties of exponents to simplify, factor and solve polynomial and radical expressions and equations over the set of complex numbers.
6. Simplify rational expressions and solve and graph rational equations including direct and inverse variation.
7. Maintain fluency and extend skills in representing equations and inequalities in multiple forms, including function notation and graphing to understand the connections between lines and their equations.
8. Analyze and solve quadratic equations and inequalities by graphing, factoring, completing the square and use of the quadratic formula.
9. Analyze, solve and graph polynomial functions of higher degree and understand the relationship between a function and its zeros, factors and inverse.
10. Understand the relationship between the geometric descriptions, graphs and equations of conics.

11. Maintain fluency and extend skills in using basic graphical and numerical techniques to analyze data in one and two variables and make inferences to justify conclusions.

Prerequisites

Geometry

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response
- Sees opportunities, finds resources and seeks results
- Uses information and technology to solve problems
- Perseveres in challenging situations

An integrative and informed thinker who:

- Gains and applies knowledge across disciplines and learning contexts and to real-life situations with and without technology
- Evaluates and synthesizes information from multiple sources
- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Mid-Chapter and Chapter Assessments; Midterm and Final Exams.

Resources

Algebra 2, Glencoe McGraw-Hill, Chapters 1-3, 5-9

Mt. Ararat High School Course Syllabus

Advanced Algebra II

Math • 10 • Full Year • 1 Credit

Course Description

This course is intended for students who are ready for a more intensive study of algebra in preparation for Advanced Pre-Calculus and AP Calculus. In addition to the topics introduced in Academic Algebra II (above), students will study polynomial, radical, rational, exponential, and logarithmic functions and their graphs in depth.

Units of Study w/ Essential Questions

Preliminary Information and Skills

How are the properties of real numbers and properties of equality useful when simplifying expressions

and solving equations?

Relations and Functions

How are tables, graphs, and equations useful to represent mathematical relationships?

Linear Functions

How are linear functions used to model, analyze, and interpret mathematical relationships?

Systems of Linear Equations and Inequalities

How are systems of linear equations and inequalities used to model, analyze, and interpret mathematical relationships?

Quadratic Functions

How are quadratic functions used to model, analyze, and interpret mathematical relationships?

Exponential and Logarithmic Functions

How are exponential and logarithmic functions used to model, analyze, and interpret mathematical relationships?

Rational Functions

How are rational functions used to model, analyze, and interpret mathematical relationships?

Irrational Functions

How are irrational functions used to model, analyze, and interpret mathematical relationships?

Quadratic Relations

How are quadratic relations used to model, analyze, and interpret mathematical relationships?

Higher Degree Polynomial Functions

How are higher degree polynomial functions used to model, analyze, and interpret mathematical relationships?

Course Learning Goals

1. Extend skills in reasoning quantitatively, creating expressions and solving equations that model real-life linear, quadratic and exponential problems.
2. Perform basic arithmetic operations on complex numbers.
3. Maintain fluency and extend skills in analyzing linear equations and inequalities and understand the reasoning associated with creating and solving them in one variable.
4. Maintain fluency and extend skills in solving systems of equations and inequalities by graphing, substitution, elimination and apply these methods to solve real-life mathematical problems.
5. Apply arithmetic operations and the properties of exponents to simplify, factor and solve polynomial and radical expressions and equations over the set of complex numbers.
6. Simplify rational expressions and solve and graph rational equations including direct and inverse variation.
7. Maintain fluency and extend skills in representing equations and inequalities in multiple forms, including function notation and graphing to understand the connections between lines and their equations.
8. Analyze and solve quadratic equations and inequalities by graphing, factoring, completing the square and use of the quadratic formula.

9. Analyze, solve and graph polynomial functions of higher degree and understand the relationship between a function and its zeros, factors and inverse.
10. Analyze, solve and graph exponential and logarithmic functions.
11. Understand the relationship between the geometric descriptions, graphs and equations of conics.
12. Maintain fluency and extend skills in using basic graphical and numerical techniques to analyze data in one and two variables and make inferences to justify conclusions.

Prerequisites

Advanced Geometry
Advanced Algebra I

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response
- Sees opportunities, finds resources and seeks results
- Uses information and technology to solve problems
- Perseveres in challenging situations

An integrative and informed thinker who:

- Gains and applies knowledge across disciplines and learning contexts and to real-life situations with and without technology
- Evaluates and synthesizes information from multiple sources
- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Mid-Chapter and Chapter Assessments; Midterm and Final Exams.

Resources

Algebra and Trigonometry, Paul A. Foerster, Chapters 1-10

Mt. Ararat High School Course Syllabus

Academic Geometry

Math • 10 • Full Year • 1 Credit

Course Description

This course will help students develop an understanding of geometric figures and their properties. Skills in drawing, visualizing, and using geometric tools will be emphasized. Real-life applications will be included. Throughout the course, algebra will be integrated with geometric topics.

Units of Study w/ Essential Questions

Discovering Points, Lines, Planes, and Angles

How are the properties of points, lines, planes, and angles useful when understanding the fundamental properties of geometry? What are the basic parts of any construction or description in geometry?

Using Perpendicular and Parallel Lines

How are perpendicular and parallel lines useful to represent geometric relationships? How can we best represent and verify geometric relationships?

Identifying Congruent Triangles

How is identifying congruent triangles used to model, analyze, and interpret geometric relationships? How do rigid motions lead to an understanding of congruence criteria for triangles?

Applying Congruent Triangles

How is applying proofs on congruent triangles used to model, analyze, and interpret geometric relationships?

Special Segments in Triangles

How are special segments in triangles used to model, analyze, and interpret geometric relationships?

Exploring Quadrilaterals

How are quadrilaterals used to model, analyze, and interpret geometric relationships?

Connecting Proportion and Similarity

How are proportions and similarity used to model, analyze, and interpret geometric relationships? How can I prove that two figures are similar? How are trigonometric ratios used to solve problems involving triangles?

Applying Right Triangles and Trigonometry

How is trigonometry used to model, analyze, and interpret geometric relationships? How are trigonometric ratios used to solve problems involving triangles?

Exploring Polygons and Area

How is the area of polygons used to model, analyze, and interpret geometric relationships? How are two-dimensional relationships connected to the properties of two-dimensional objects?

Investigating Surface Area and Volume

How are surface area and volume used to model, analyze, and interpret geometric relationships? What is the relationship between the different measures in two- and three-dimensional objects? How does a change in one dimension of an object affect the other dimensions?

Transformations

How are transformations used to model, analyze, and interpret geometric relationships? What are the similarities and differences between the images and pre-images generated by transformations and/or multiple transformations?

Connecting Reasoning and Proof Using Inductive and Deductive Reasoning

How are the foundations of logical reasoning used to develop and prove conjectures which can be applied to real-world situations? Why are proofs important in developing geometric concepts?

Analyzing Circles and Sectors

How are circles and sectors used to model, analyze, and interpret geometric relationships? How are geometric properties of circles embedded in equations? How is proportion used in arc and sector measurements?

Course Learning Goals

1. Reason quantitatively, create expressions and solve equations that model real-life problems in geometry.
2. Maintain fluency of algebra skills in relation to solving geometric problems.
3. Identify points, lines, planes and angles and describe the relationships between them to include drawing and constructions.
4. Use properties of perpendicular and parallel lines to solve problems.
5. Classify and identify triangles and apply geometric theorems to show congruency and to solve problems.
6. Recognize and apply relationships between sides and angles in a triangle to prove triangles congruent and to solve problems.
7. Identify and use special segments in a triangle to solve problems and use the inequalities in triangles to apply relationships between sides and angles.
8. Classify and identify quadrilaterals and apply geometric theorems to solve problems algebraically and graphically.
9. Identify similar figures and use ratios and proportions to solve problems.
10. Define trigonometric ratios and use those ratios and the Pythagorean Theorem to solve problems involving right triangles.
11. Solve real-world and mathematical problems involving areas of polygons and circles.
12. Visualize relationships between two and three-dimensional objects and solve real-world and mathematical problems involving surface area and volume of prisms, pyramids and spheres.
13. Use transformations to explore translations, reflections, size changes, and rotations.
14. Use inductive and deductive reasoning to make conjectures both verbally, algebraically, and geometrically.
15. Use properties of circles to solve problems and find arc lengths and areas of sectors.

Prerequisites

Algebra I

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response
- Sees opportunities, finds resources and seeks results
- Uses information and technology to solve problems
- Perseveres in challenging situations

An integrative and informed thinker who:

- Gains and applies knowledge across disciplines and learning contexts and to real-life situations with and without technology
- Evaluates and synthesizes information from multiple sources
- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Mid-Chapter and Chapter Assessments; Midterm and Final Exams.

Resources

Geometry, Glencoe McGraw-Hill, Chapters 1-11, 13



Mt. Ararat High School Course Syllabus

Advanced Geometry

Math • 10 • Full Year • 1 Credit

Course Description

The course content is similar to that of Academic Geometry, but with additional emphasis on problem solving, trigonometry, and solid geometry.

Units of Study w/ Essential Questions

Discovering Points, Lines, Planes, and Angles

How are the properties of points, lines, planes, and angles useful when understanding the fundamental properties of geometry? What are the basic parts of any construction or description in geometry?

Using Perpendicular and Parallel Lines

How are perpendicular and parallel lines useful to represent geometric relationships? How can we best represent and verify geometric relationships?

Identifying Congruent Triangles

How is identifying congruent triangles used to model, analyze, and interpret geometric relationships? How do rigid motions lead to an understanding of congruence criteria for triangles?

Applying Congruent Triangles

How is applying proofs on congruent triangles used to model, analyze, and interpret geometric relationships?

Special Segments in Triangles

How are special segments in triangles used to model, analyze, and interpret geometric relationships?

Exploring Quadrilaterals

How are quadrilaterals used to model, analyze, and interpret geometric relationships? How are quadrilaterals classified?

Connecting Proportion and Similarity

How are proportions and similarity used to model, analyze, and interpret geometric relationships? How can I prove that two figures are similar? How are trigonometric ratios used to solve problems involving triangles?

Applying Right Triangles and Trigonometry

How is trigonometry used to model, analyze, and interpret geometric relationships? How are trigonometric ratios used to solve problems involving triangles?

Exploring Polygons and Area

How is the area of polygons used to model, analyze, and interpret geometric relationships? How are two-dimensional relationships connected to the properties of two-dimensional objects?

Investigating Surface Area and Volume

How are surface area and volume used to model, analyze, and interpret geometric relationships? What is the relationship between the different measures in two- and three-dimensional objects? How does a change in one dimension of an object affect the other dimensions?

Transformations

How are transformations used to model, analyze, and interpret geometric relationships? What are the similarities and differences between the images and pre-images generated by transformations and/or multiple transformations?

Connecting Reasoning and Proof Using Inductive and Deductive Reasoning

How are the foundations of logical reasoning used to develop and prove conjectures which can be applied to real-world situations? Why are proofs important in developing geometric concepts?

Analyzing Circles and Sectors

How are circles and sectors used to model, analyze, and interpret geometric relationships? How are geometric properties of circles embedded in equations? How is proportion used in arc and sector measurements?

Course Learning Goals

1. Reason quantitatively, create expressions and solve equations that model real-life problems in geometry.
2. Maintain fluency of algebra skills in relation to solving geometric problems.
3. Identify points, lines, planes and angles and describe the relationships between them to include drawing and constructions.
4. Use properties of perpendicular and parallel lines to solve problems.
5. Classify and identify triangles and apply geometric theorems to show congruency and to solve problems.
6. Recognize and apply relationships between sides and angles in a triangle to prove triangles congruent and to solve problems.
7. Identify and use special segments in a triangle to solve problems and use the inequalities in triangles to apply relationships between sides and angles.
8. Classify and identify quadrilaterals and apply geometric theorems to solve problems algebraically and graphically.
9. Identify similar figures and use ratios and proportions to solve problems.
10. Define trigonometric ratios and use those ratios and the Pythagorean Theorem to solve problems involving right triangles.
11. Solve real-world and mathematical problems involving areas of polygons and circles.
12. Visualize relationships between two and three-dimensional objects and solve real-world and mathematical problems involving surface area and volume of prisms, pyramids and spheres.
13. Use transformations to explore translations, reflections, size changes, and rotations.

14. Use inductive and deductive reasoning to make conjectures both verbally, algebraically, and geometrically.
15. Use properties of circles to solve problems and find arc lengths and areas of sectors.

Prerequisites

Algebra I in 8th Grade

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response
- Sees opportunities, finds resources and seeks results
- Uses information and technology to solve problems
- Perseveres in challenging situations

An integrative and informed thinker who:

- Gains and applies knowledge across disciplines and learning contexts and to real-life situations with and without technology
- Evaluates and synthesizes information from multiple sources
- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Mid-Chapter and Chapter Assessments; Midterm and Final Exams.

Resources

Geometry, Glencoe McGraw-Hill, Chapters 1-11, 13

Mt. Ararat High School Course Syllabus

Pre-Calculus

Math • 12 • Full Year • 1 Credit

Course Description

This course is intended for students who wish to continue their study of mathematics and prepare for post-secondary requirements. Topics such as quadratic functions, polynomial functions, rational functions, transformations of graphs, exponential and logarithmic functions, and trigonometric functions are studied. The course will provide the necessary background for college level calculus.

Units of Study w/ Essential Questions

Linear Relations and Functions

How can functions be used to solve practical problems and represent real world situations algebraically and graphically?

Systems of Linear Equations and Inequalities

How are systems of equations and inequalities solved algebraically and then used graphically to represent situations, solve problems and apply to real world questions?

Nature of Graphs and their Transformations

How do you use mathematical transformations to interpret relationships of graphs by applying translations, reflections, rotations and dilations?

Quadratic, Polynomial and Rational Functions

How are quadratic, polynomial and rational functions used to model, analyze, and interpret mathematical relationships and model real-world problems and their solutions?

Exponential and Logarithmic Functions

How are the laws of exponents and logarithms used to model, analyze, and interpret mathematical relationships and applied to graphing and solving real-world situations?

Trigonometric Functions

How are trigonometric functions used to model, analyze and interpret trigonometric ratios and apply trigonometry to solve real world problems?

Graphs of Trigonometric Functions

How are graphs of trigonometric functions used to interpret mathematical relationships and applied to solve real world problems?

Course Learning Goals

1. Analyze advanced concepts in functions that includes linear, piecewise, absolute value, inverse and composite functions and use graphs to show how one variable is related to another.
2. Apply advanced skills in solving systems of equations and inequalities to solve real-life mathematical problems by graphing and using optimization techniques.
3. Analyze families of graphs and understand the effects of transformations.
4. Apply advanced mathematical modeling and graphing to polynomial and rational functions over the set of complex numbers.
5. Apply advanced mathematical modeling and graphing to exponential and logarithmic functions.
6. Apply triangular trigonometry to solve geometric problems including real-world applications.
7. Use trigonometric functions to model periodic quantities and understand the characteristics of trigonometric graphs defined by using a unit circle.

Prerequisites

Advanced Algebra II

Academic Algebra II

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response
- Sees opportunities, finds resources and seeks results
- Uses information and technology to solve problems
- Perseveres in challenging situations

An integrative and informed thinker who:

- Gains and applies knowledge across disciplines and learning contexts and to real-life situations with and without technology
- Evaluates and synthesizes information from multiple sources
- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Mid-Chapter and Chapter Assessments; Midterm and Final Exams.

Resources

Glencoe Advanced Mathematical Concepts; Precalculus with Applications
McGraw Hill, Chapters 1- 6, 11

Mt. Ararat High School Course Syllabus

Advanced Pre-Calculus

Math • 11 • Full Year • 1 Credit

Course Description

This course is intended for students who plan to study calculus, statistics or other college-level math courses in their senior or college years. All important pre-calculus topics are addressed, including but not limited to: polynomial functions, analytic geometry, exponential and logarithmic functions, complex numbers, trigonometry functions, sequences and series, matrices, combinatorics, probability and an introduction to calculus.

Units of Study w/ Essential Questions**Functions and Their Graphs**

How can functions be used to solve practical problems and represent real world situations algebraically and graphically?

Systems of Equations and Inequalities

How are systems of equations and inequalities solved algebraically and then used graphically to represent situations, solve problems and apply to real world questions?

Nature of Graphs and their Transformations

How do you use mathematical transformations to interpret relationships of graphs by applying translations, reflections, rotations and dilations?

Polynomial and Rational Functions

How are quadratic, polynomial and rational functions used to model, analyze, and interpret mathematical relationships and model real-world problems and their solutions?

Exponential and Logarithmic Functions

How are the laws of exponents and logarithms used to model, analyze, and interpret mathematical relationships and applied to graphing and solving real-world situations?

Trigonometric Functions

How are trigonometric functions used to model, analyze and interpret trigonometric ratios and apply trigonometry to solve real world problems?

Graphs of Trigonometric Functions

How are graphs of trigonometric functions used to interpret mathematical relationships and applied to solve real world problems?

Analytic Trigonometry

How are trigonometric identities used to solve trigonometric equations, investigate inverse trigonometric functions, and interpret and graph trigonometric relationships?

Sequences and Series

How are patterns in sequences and series used to model, analyze, and interpret mathematical relationships used to solve real world problems?

Combinatorics and Probability

How are combinatorics and probability used to determine the total number of outcomes for event and how do you use this to interpret mathematical relationships in probability?

Topics in Analytic Geometry - Conics

How are graphs of conics used to model, analyze, and interpret mathematical relationships?

Course Learning Goals

1. Model real-life applications of sequences and series using patterns and formulas.
2. Maintain fluency and extend skills in understanding the relationship between the geometric descriptions, graphs and equations of conics.
3. Analyze advanced concepts in functions that includes linear, piecewise, absolute value, inverse and composite functions and use graphs to show how one variable is related to another.
4. Apply advanced skills in solving systems of equations and inequalities to solve real-life mathematical problems by graphing and using optimization techniques.
5. Analyze families of graphs and understand the effects of transformations.
6. Apply advanced mathematical modeling and graphing to polynomial and rational functions over the set of complex numbers.
7. Apply advanced mathematical modeling and graphing to exponential and logarithmic functions.
8. Apply triangular trigonometry to solve geometric problems including real-world applications.
9. Use trigonometric functions to model periodic quantities and understand the characteristics of trigonometric graphs defined by using a unit circle.
10. Simplify and solve trigonometric functions using trigonometric identities.
11. Solve counting problems and use probabilities to evaluate outcomes of compound, mutually exclusive, independent and conditional events.

Prerequisites

Advanced Algebra II

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response

- Sees opportunities, finds resources and seeks results
- Uses information and technology to solve problems
- Perseveres in challenging situations

An integrative and informed thinker who:

- Gains and applies knowledge across disciplines and learning contexts and to real-life situations with and without technology
- Evaluates and synthesizes information from multiple sources
- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Mid-Chapter and Chapter Assessments; Midterm and Final Exams

Resources

Precalculus with Limits, Larson, Chapters 1- 7, 9, 10



Calculus

Math • 11/12 • Full Year • 1 Credit

Course Description

This course is offered to students who wish to prepare for postsecondary study in fields such as engineering, mathematics, physics, and applied science. Students will study topics such as limits, derivatives and their applications, and integral calculus with applications.

Units of Study w/ Essential Questions

Limits and Their Properties

How are limits evaluated graphically, numerically and analytically? What does it mean for a function to be continuous?

Differentiation

What is the relationship between a function and its derivative? How are differentiation rules used to find derivatives of functions? What is the relationship between position, velocity and acceleration both analytically and graphically?

Applications of Differentiation

How are calculus techniques used to analyze and graph functions? What is the relationship between the sign, direction and concavity of curves and their equations? How are derivatives used to solve real world problems?

Integration

What is the relationship between a function and an integral? How are Riemann sums used to approximate integrals? What is the relationship between derivatives and integrals? How is integration used to solve differential equations?

Exponential and Logarithmic Functions

How do derivative and integration rules apply to transcendental functions? What is the relationship between functions, their inverses and their derivatives?

Applications of Integration

How is integration used to represent and calculate area and volumes? How are integrals used to solve real world problems?

Course Learning Goals

1. Maintain fluency in working with functions represented in a variety of ways (graphical, numerical, analytical, and/or verbal) and understand the connections among these representations.
2. Understand the limit process and evaluate limits analytically, graphically, and numerically.
3. Understand the meaning of the derivative in terms of a rate of change and find derivatives by applying differentiation rules to include implicit differentiation and higher-order derivatives.
4. Apply calculus techniques to analyze and graph functions and understand the relationship between the sign, direction and concavity of curves and their equations.
5. Use derivatives to solve a variety of applied problems including related rates and optimization.
6. Evaluate indefinite integrals and understand the meaning of the definite integral as a limit of Riemann sums, the net accumulation of change, and as an area.
7. Describe the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus and use integrals to solve a variety of applied problems.
8. Apply differentiation and integration techniques to exponential, logarithmic, trigonometric and inverse functions.
9. Model real-life situations with a function, a differential equation, or an integral and use calculus techniques to solve corresponding applied problems.

Prerequisites

Pre-Calculus

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
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- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Chapter Assessments; Midterm and Final Exams.

Resources

Calculus of a Single Variable, Larson, Hostetler, Edwards, Chapters 1- 7

Mt. Ararat High School Course Syllabus

AP Calculus AB

Math • 11/12 • Full Year • 1 Credit

Course Description

This course is offered to students who want to prepare for a field requiring an extensive background in mathematics. Students will study all topics addressed in a first semester college calculus course, including limits, derivatives and integral calculus with applications. Students are prepared for the Advanced Placement Calculus Examination, which may enable them to earn college course credits.

Units of Study w/ Essential Questions

Limits and Their Properties

How are limits evaluated graphically, numerically and analytically? What does it mean for a function to be continuous?

Differentiation

What is the relationship between a function and its derivative? How are differentiation rules used to find derivatives of functions? What is the relationship between position, velocity and acceleration both analytically and graphically?

Applications of Differentiation

How are calculus techniques used to analyze and graph functions? What is the relationship between the sign, direction and concavity of curves and their equations? How are derivatives used to solve real world problems?

Integration

What is the relationship between a function and an integral? How are Riemann sums used to approximate integrals? What is the relationship between derivatives and integrals? How is integration used to solve differential equations?

Exponential and Logarithmic Functions

How do derivative and integration rules apply to transcendental functions? What is the relationship between functions, their inverses and their derivatives?

Differential Equations

What is the relationship between slope fields, differential equations and their solutions?

Applications of Integration

How is integration used to represent and calculate area and volumes? How are integrals used to solve real world problems?

Course Learning Goals

1. Maintain fluency in working with functions represented in a variety of ways (graphical, numerical, analytical, and/or verbal) and understand the connections among these

representations.

2. Understand the limit process and evaluate limits analytically, graphically, and numerically.
3. Understand the meaning of the derivative in terms of a rate of change and find derivatives by applying differentiation rules to include implicit differentiation and higher-order derivatives.
4. Apply calculus techniques to analyze and graph functions and understand the relationship between the sign, direction and concavity of curves and their equations.
5. Use derivatives to solve a variety of applied problems including related rates and optimization.
6. Evaluate indefinite integrals and understand the meaning of the definite integral as a limit of Riemann sums, the net accumulation of change, and as an area.
7. Describe the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus and use integrals to solve a variety of applied problems.
8. Apply differentiation and integration techniques to exponential, logarithmic, trigonometric and inverse functions.
9. Understand the relationship between slope fields and solutions to differential equations and use separation of variables to solve differential equations.
10. Represent and calculate the volume of solid figures using integrals.
11. Model real-life situations with a function, a differential equation, or an integral and use calculus techniques to solve corresponding applied problems.

Prerequisites

Advanced Pre-Calculus

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
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- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response
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- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Chapter Assessments; Midterm and Final Exams

Resources

Calculus of a Single Variable, Larson, Hostetler, Edwards, Chapters 1- 7

Course Description

This course is offered to students who wish to enter college prepared to study multivariable calculus. The course will strengthen the student's mastery of the AB Calculus syllabus and extend to parametric, polar, and vector functions. It will expand the student's knowledge and understanding of limits, graphical behavior, derivatives, integrals and differential equations. This course will also introduce the student to polynomial approximations and series. Students prepare for the Advanced Placement BC Calculus Examination.

Units of Study w/ Essential Questions

Advanced Integration Techniques

How are advanced integration techniques used to evaluate more complex integrals? How are improper integrals related to proper integrals, and how are they evaluated?

Parametric Equations

What is the relationship between parametric and rectangular equations? How are differentiation rules applied to solve parametric equations and modeling applications?

Polar Equations

What is the relationship between polar and rectangular equations? How are differentiation rules applied to polar equations? How are integrals used to model areas of polar graphs?

Series Convergence

What is the difference between convergent and divergent sequences and series? How are convergence tests used to determine whether a sequence or series is convergent or divergent?

Taylor Polynomials and Series

How are Taylor polynomials used to approximate functions? What is the error on such approximations? How are Taylor series used to approximate more complicated functions?

Advanced Modeling with Differential Equations

How are Euler's method and series methods used to approximate solutions to differential equations? How do logistic growth models help find solutions to population related problems?

Calculus Modeling with Limits, Derivatives and Integration

How are limits, derivatives and integrals applied to advanced modeling applications?

Course Learning Goals

1. Maintain fluency and extend skills in evaluating limits, derivatives and integrals to solve corresponding applied problems.
2. Apply advanced integration techniques to evaluate integrals to include integration by parts, partial fractions, and improper integrals.
3. Analyze curves given in parametric form, and use derivatives and integrals of parametric equations to solve applied problems including motion, vectors, and curve length.
4. Analyze curves given in polar form, evaluate derivatives of polar equations and use integrals to find arc lengths and areas of polar curves.
5. Understand the difference between convergent and divergent sequences and series and

- apply appropriate tests to determine convergence.
6. Represent and approximate functions using Taylor polynomials and series and determine the accuracy of such approximations by analyzing the remainder.
 7. Apply a variety of techniques to solve differential equations, including separation of variables, Euler's method and logistic growth models.
 8. Apply advanced calculus skills to model real-life situations with a function, a differential equation, or an integral and to solve corresponding applied problems.

Prerequisites

AP Calculus AB

Guiding Principle(s)

A creative and practical problem solver who:

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Assessments

Chapter Assessments; Midterm and Final Exams

Resources

Calculus of a Single Variable, Larson, Hostetler, Edwards, Chapters 1- 10



Mt. Ararat High School Course Syllabus

Senior Mathematics Review

Math • 12 • Full Year • 1 Credit

Course Description

This course is designed to deepen the core knowledge expected of students in college entry level mathematics courses. It provides the skill reinforcement and support needed for success in the transition from secondary to postsecondary education. Students with Accuplacer Arithmetic and/or Algebra placement test scores below 65 and SAT scores below 490 are encouraged to enroll.

Units of Study w/ Essential Questions

Arithmetic Operations with Integers and Decimals

What are the procedures to add, subtract, multiply and divide integers and decimals without a calculator

Arithmetic Operations with Fractions

What are the procedures to add, subtract, multiply and divide fractions without a calculator

Solving Percentage Problems

What are the procedures for solving various percentage problems without a calculator

Language and Tools of Algebra

How are the properties of real numbers and algebraic symbols used to express relationships and solve real-world problems?

Solving Linear Equations

What are the steps to solve and how are linear equations useful to represent mathematical relationships?

Functions and Patterns

How are functions and patterns used to model, analyze, and interpret mathematical relationships?

Analyzing Linear Equations

How are linear equations used to model, analyze, and interpret mathematical relationships?

Solving Systems of Linear Equations

What are the steps to solve and how are systems of linear equations used to model, analyze, and interpret mathematical relationships?

Polynomial Operations

How are polynomial functions used to model, analyze, and interpret mathematical relationships?

Course Learning Goals

1. Students will maintain fluency in the arithmetic and algebra skills that are assessed by college placement exams.

Prerequisites

Algebra I, Geometry, Algebra II

Guiding Principle(s)

A creative and practical problem solver who:

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Assessments

Mid-Chapter and Chapter Assessments; Midterm and Final Exams.

Resources

Online worksheets for the Arithmetic Units of Study
Algebra 1, Glencoe McGraw-Hill, Chapters 1-3, 5, 6



Introduction to Coding

Math • 9-12 • 1 semester • 0.5 Credit

Course Description

This semester course is designed as an introduction to the coding experience. No prior computer programming experience is needed. In this course students will create programs to solve problems and develop interactive games or stories that they can share. Fundamental coding concepts such as loops and function parameters will be explored. Upon completion of this course, interested students may take Computer Science I.

Units of Study w/ Essential Questions

Computer Basics and Ethics

What is the overall purpose of a Code of Ethical Practice? What are the Key Principles of the IEEE Code of Ethics? What is the “Waterfall” model of the Software Development Cycle?

Algorithms

What is an algorithm? How are algorithms applied to solving problems?

Standard Functions and Coding Concepts

What are the primary properties of UTF-8 and why is this encoding sequence more favorable over ASCII? What are four primary components of building a good program?

Java Basics

What is the fundamental concept of Object Oriented Programming? What are the advantages of OOP over Procedural Programming? Is Java a Procedural or OOP Language?

Defining Variables, Arithmetic Expressions in Java

What are the different types of variables and how are they defined? What does it mean for variable

expressions to be left side precedence?

Conditionals and Looping

What are the different types of loops and how do they differ from one another? Conditional Statements require a comparison of variables and values, what is the key term used to represent the result of this comparison?

Arrays

How are arrays similar to variables and how are they different? What are the key components in defining an array?

Graphical User Interface (GUIs)

What is a GUI and how do we set up and define JFrame and JPanel in Java?

Debugging Code

What are the key techniques used for debugging code? What are some of the greatest challenges when debugging code?

Course Learning Goals

1. Develop programming algorithms to solve problems.
2. Apply standard functions in programs to solve problems.
3. Implement functions with parameters in programs to solve problems.
4. Write conditional statements to develop parameters to solve problems.
5. Utilize while loops in programs to make for more efficient code.
6. Implement nested loops in code to solve problems.
7. Apply appropriate debugging methods to solve program issues.
8. Utilize for loops in programs to make for more efficient code.

Prerequisites

None

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
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Assessments

Resources

- Code.org “Express Course”
- Oracle, oracle.com
- <https://docs.oracle.com/javase/tutorial/>
- bluej.org “Java Development Environment”

Mt. Ararat High School Course Syllabus

Computer Science

Math • 9-12 • Full Year • 1 Credit

Course Description

Designed to help students experience sound techniques of problem-solving through the use of the computer, this course is an introduction to programming in Java. Computer Science is a heavily lab- oriented, hands-on class where students are encouraged to develop their own problem-solving strategies. Students will solve problems involving business, science, mathematics, manufacturing, and construction. The course stresses the construction of software that is both user-friendly as well as well-documented.

Units of Study w/ Essential Questions

Computer Basics and Ethics

How does a Code of Ethical Practice improve the field of Software Development and Design? What are the Key Principles of the IEEE Code of Ethics? What is the “Waterfall” model of the Software Development Cycle?

Java Basics

What is the fundamental concept of Object Oriented Programming? What are the advantages of OOP over Procedural Programming? Is Java a Procedural or OOP Language?

Defining Variables, Arithmetic Expressions

What are the different types of variables and how are they defined? What does it mean for variable expressions to have left side precedence?

Introduction to Classes and Object Oriented Programming

What are the advantages of Object Oriented Programming versus Procedural Programming Languages? How are Class Structure and Methods similar to Subroutines.

Conditionals and Looping

What are this different types of conditional statements and loops in Java? How are Boolean Values used as controls for Conditionals and Loops?

Arrays

How are arrays similar to variables and how are they different? What are the key components in defining an array? What advantages can you experience by using an array of objects?

Files and Interfaces

What are some of the key parts to enable a Java Class to access an external file? What are the different file types that can be accessed in Java?

Graphical User Interface (GUIs)

What is a GUI and how do we set up and define JFrame and JPanel in Java? How can we customize a JPanel so it includes more complex graphical components?

GUI Animations

What are the key components to running animations in the GUI paintComponent method?

GUI Fractals

What does it mean to say an image is self similar? How has Computer Programming Technology enhanced the study of Fractal Geometry?

Course Learning Goals

1. Understand the basic structure of computer hardware and software along with machine code (binary number systems), assembly language and higher level programming languages.
2. Utilize established GUI dialog box interfaces to develop user friendly programs.
3. Utilize GUI interfaces to create graphic content.
4. Define variables and write algebraic formulas and expressions in Java.
5. Understand the fundamentals of classes and object oriented programming.
6. Write conditional statements and establish looping sequences in Java.
7. Apply the structure of the JPanel class inheritance and interface structures to solve problems.
8. Utilize GUI interface to explore recursive fractal mathematics.
9. Utilize arrays and array lists to organize variable data.
10. Utilize program structures to interact with data files and databases

Prerequisites

Algebra I

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response
- Sees opportunities, finds resources and seeks results
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- Perseveres in challenging situations

An integrative and informed thinker who:

- Gains and applies knowledge across disciplines and learning contexts and to real-life situations with and without technology
- Evaluates and synthesizes information from multiple sources
- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Projects in Java; Midterm and Final Exams

Resources

- bluej.org “Java Development Environment”

- Oracle, oracle.com

<https://docs.oracle.com/javase/tutorial/>

- Lambert and Osborne (2007), *Fundamentals of Java: AP* Computer Science Essentials for the A and AB Exams*, Boston, MA: Thomas Course Technology, Chapters 1-7, 9-13

Mt. Ararat High School Course Syllabus

AP Computer Science

Math • 10-12 • Full Year • 1 Credit

Course Description

This is both a course for potential computer science majors and a foundation course for students planning to study in other technical fields such as engineering, physics, chemistry, and geology. The course emphasizes programming methodology and problem-solving through hands-on lab experiences. Students are prepared for the Advanced Placement Computer Science A exam, which may enable them to earn college credits.

Units of Study w/ Essential Questions

Computer Basics and Ethics

How does a Code of Ethical Practice improve the field of Software Development and Design? What are the Key Principles of the IEEE Code of Ethics? What is the “Waterfall” model of the Software Development Cycle?

Java Basics

What is the fundamental concept of Object Oriented Programming? What are the advantages of OOP over Procedural Programming? Is Java a Procedural or OOP Language?

Defining Variables, Arithmetic Expressions

What are the different ways to define variables and what are their similarities and differences?

Introduction to Classes and Object Oriented Programming

What are the advantages of Object Oriented Programming versus Procedural Programming Languages? How are Class Structure and Methods similar to Subroutines.

Conditionals and Looping

What are this different types of conditional statements and loops in Java? How are Boolean Values used as controls for Conditionals and Loops?

The String Class

How does Java search a String for Key-Words? How is indexOf(String str, int fromIndex) method used in finding Key-Words?

Array Lists

What is the difference between an Array List and a Standard Array Structure? When is it more favorable to use an Array List over a Standard Array?

Arrays

How are arrays similar to variables and how are they different? What are the key components in defining an array? What advantages can you experience by using an array of objects?

Searching and Sorting Arrays

What are the differences between a Linear Search and a Binary Search?

More on Classes, Inheritance, and Interfaces

What is a Parent Class? What is the difference between Private and Public Classes? What is a Class Interface?

Elevens Lab

What are the advantages of using an Abstract Board Class when implementing the Elevens Game? How does the Abstract Class relate to Parent Classes and Inheritance?

Deeper with Inheritance

How do we utilize Inheritance of Classes in improved program structure and design?

Recursion (and Merge Sort)

What are the key aspects for writing a Recursive Method? How can recursion be used to sort an array of class objects?

Course Learning Goals

1. Understand the structure of computer hardware and software along with machine code (binary and hexadecimal number systems), assembly language and higher level programming languages, such as HTML, JAVA, C++.
2. Recognize and use two-dimensional arrays to solve problems.
3. Utilize appropriate methods for searching and sorting arrays.
4. Utilize methods of recursion and merge sort to solve problems.
5. Understand the difference between variables declared as "int" or "double" and write algebraic formulas and expressions in Java.
6. Understand the fundamentals of and develop customized classes in object oriented programming.
7. Apply method functions to the string class.
8. Write conditional statements and establish efficient user friendly looping sequences in Java.
9. Apply the structure of class inheritance and interface structures to solve problems. Utilize arrays and array lists to organize objects and variable data.

Prerequisites

Computer Science or Permission from Instructor

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response
- Sees opportunities, finds resources and seeks results
- Uses information and technology to solve problems

- Perseveres in challenging situations

An integrative and informed thinker who:

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Assessments

Textbook Activities, Java Projects, AP Labs, Midterm and Final Exams

Resources

- Lambert and Osborne (2007), *Fundamentals of Java: AP* Computer Science Essentials for the A and AB Exams*, Boston, MA: Thomas Course Technology, Chapters 1-7, 9-13
- AP Computer Science A Java Subset
- Litvin and Litvin, *Be Prepared for the AP* Computer Science Exam in Java*, Skylight Publishing
- bluej.org “Java Development Environment”

Mt. Ararat High School Course Syllabus

Statistics

Math • 11-12 • Full Year • 1 Credit

Course Description

This course is intended for students who plan to enroll in majors that use statistics, such as psychology, business, health science, sociology, history, education, science, pre-law, and engineering. Students will analyze data using the TI-83 graphing calculator. The concepts studied include: organizing and exploring data, correlation and regression, sampling and experiments, and probability.

Units of Study w/ Essential Questions

Introduction to Statistics

What is Statistics and how is data categorized?

Describing Data

What are the ways in which data can be organized into tables and/or graphs, and which are more useful in certain instances?

Normal Probability Distributions

What types of events are normally distributed and how do we calculate the probabilities of these events?

Correlation/Regression

How do we determine if there is a statistically significant correlation between two variables, and, if so, how can we obtain an approximation?

Experimental Design

What considerations should be made when designing an experiment and what does it mean for results to be considered biased?

Advanced Probability

What is probability and how is it applied across disciplines?

Random Variables

What constitutes a discrete probability distribution and how do we calculate probabilities for them?

Sampling Distributions

What would happen if we repeated the sample or experiment many times?

Advanced Regression

What is regression analysis? What are the benefits of using an equation to model data and how does one know how well an equation models a set of data?

Course Learning Goals

1. Distinguish between categorical and quantitative variables and use appropriate methods to display and describe these types of data.
2. Model distributions of data with density curves and understand the concept of standardizing values within a normal distribution to calculate z-scores and percentiles.
3. Analyze scatter plots and residual plots to describe relationship and correlation between two variables, and use the least squares regression line to assess fit and predict future values.
4. Identify and explain different methods of sampling and surveys and evaluate strengths and weaknesses of various experimental designs.
5. Apply probability rules and use diagrams to calculate and interpret complementary, mutually exclusive, independent and conditional probabilities.
6. Calculate and interpret probabilities using distributions of discrete, continuous, independent, binomial and geometric random variables.
7. Describe sampling distributions by including measures of shape, center, and spread for sample proportions and sample means.
8. Model nonlinear data using transformations to achieve linearity and conduct inference on the resulting linear regression models.

Prerequisites

Pre-Calculus

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response
- Sees opportunities, finds resources and seeks results
- Uses information and technology to solve problems
- Perseveres in challenging situations

An integrative and informed thinker who:

- Gains and applies knowledge across disciplines and learning contexts and to real-life situations with and without technology
- Evaluates and synthesizes information from multiple sources
- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Mid-Chapter and Chapter Assessments; Midterm and Final Exams.

Resources

Larson, R. and Farber, E. (2012). *Elementary statistics*. Boston: Pearson Prentice Hall.

Learner, A., Pierpoint, S., Learner, A., Learner, A. and Learner, A. (2019). *Learner Log / A place to explore teaching and learning*. [online] Learnerlog.org. Available at: <http://learnerlog.org/> [Accessed 7 Mar. 2019].

Mt. Ararat High School Course Syllabus

AP Statistics

Math • 11/12 • Full Year • 1 Credit

Course Description

This course is intended for students who wish to move beyond the topics covered in Statistics, described above. A supplementary text is assigned, as the course features more rigorous problems and additional topics. Students may take this class concurrently with Pre-Calculus with math teacher recommendation. Students are prepared for the AP Statistics Examination, which may enable them to earn college credit.

Units of Study w/ Essential Questions

Introduction to Statistics

What is Statistics and how is data categorized?

Describing Data

What are the ways in which data can be organized into tables and/or graphs, and which are more useful in certain instances?

Normal Probability Distributions

What types of events are normally distributed and how do we calculate the probabilities of these events?

Correlation/Regression

How do we determine if there is a statistically significant correlation between two variables, and, if so, how can we obtain an approximation?

Experimental Design

What considerations should be made when designing an experiment and what does it mean for results to be considered biased?

Advanced Probability

What is probability and how is it applied across disciplines?

Random Variables

What constitutes a discrete probability distribution and how do we calculate probabilities for them?

Sampling Distributions

What would happen if we repeated the sample or experiment many times?

Estimating

How do we use probability and marginal error using a sample and confidence intervals to find an estimate for a population parameter?

Significance Tests

How and when can we reject or fail to reject a claim about a population parameter by looking at an appropriate sample?

Comparing Populations

How do we perform hypothesis testing on two samples to determine if the related populations are statistically different?

Inference

Do the values of one categorical variable depend on the value of the other categorical variables and why is it important to understand hypothesis testing prior to using Chi-Square?

Advanced Regression

What is regression analysis? What are the benefits of using an equation to model data and how does one know how well an equation models a set of data?

Course Learning Goals

1. Distinguish between categorical and quantitative variables and use appropriate methods to display and describe these types of data.
2. Model distributions of data with density curves and understand the concept of standardizing values within a normal distribution to calculate z-scores and percentiles.
3. Analyze scatter plots and residual plots to describe relationship and correlation between two variables, and use the least squares regression line to assess fit and predict future values.
4. Identify and explain different methods of sampling and surveys and evaluate strengths and weaknesses of various experimental designs.
5. Apply probability rules and use diagrams to calculate and interpret complementary, mutually exclusive, independent and conditional probabilities.
6. Calculate and interpret probabilities using distributions of discrete, continuous, independent, binomial and geometric random variables.
7. Describe sampling distributions by including measures of shape, center, and spread for sample proportions and sample means.
8. Apply techniques of confidence intervals and hypothesis testing to draw and communicate conclusions regarding population proportions and population means.
9. Analyze and interpret significance test results to determine statistical significance of population proportions and means
10. Compare two population proportions or means using tests of significance or confidence intervals.
11. Perform and interpret conclusions from the Chi-squared tests for goodness of fit, homogeneity and independence to make inference for distributions of categorical data.

12. Model nonlinear data using transformations to achieve linearity and conduct inference on the resulting linear regression models.

Prerequisites

Pre-Calculus

Guiding Principle(s)

A creative and practical problem solver who:

- Observes and evaluates situations to define problems
- Frames questions, makes predictions and designs data/information collection and analysis strategies
- Identifies patterns, trends and relationships that apply to solutions
- Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response
- Sees opportunities, finds resources and seeks results
- Uses information and technology to solve problems
- Perseveres in challenging situations

An integrative and informed thinker who:

- Gains and applies knowledge across disciplines and learning contexts and to real-life situations with and without technology
- Evaluates and synthesizes information from multiple sources
- Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes

Assessments

Chapter Assessments; Midterm and Final Exams.

Resources

The Practice of Statistics, 5th Edition; W.H. Freeman and Company; Chapters 1-12

Mt. Ararat High School Course Syllabus

Concert Band

Music • 9-12 • Full Year • 1 Credit

Course Description

In this course students will perform and learn about a variety of pieces from the concert band repertoire. Throughout the year students will perform in a variety of settings including school concerts, festivals and pep band games. In the Spring the band also marches in the memorial day parade. In order to be in the band, a student must demonstrate a proficiency level that shows the student can be a contributing band member.

Units of Study w/ Essential Questions

Balance: How do we create a balanced ensemble sound?

Technique: How can we further develop our individual technique to play increasingly complex passages?

Intonation: What must we do as individuals and as a group to play in tune?

Interpretation: What are the musical, emotional or literal meanings behind a piece of music? How can we

express that in our performance?

Context: How can current and historical events influence a piece of music, in both its conception and performance?

Repertoire: What is the band repertoire? Who are some important composers? What do pieces from different time periods and countries sound like?

Creation: What are some considerations that go into writing a piece of music?

Ensemble: What are the differences between Wind Ensemble, Marching Band and Pep Band?

Community: How can we contribute to our local and school community through music?

Course Learning Goals

1. Students will demonstrate how understanding the style, genre, and context of a varied repertoire of music informs prepared performances as well as performers' technical skill to connect with the audience.
2. Students will develop, apply, and refine appropriate rehearsal strategies to address individual and ensemble challenges in a varied repertoire of music.
3. Students will demonstrate an understanding and mastery of the technical demands and expressive qualities of the music through prepared performances of a varied repertoire representing diverse cultures, styles, genres, and historical periods.
4. Students will justify interpretations of the expressive intent and meaning of musical works by comparing and synthesizing varied researched sources, including reference to other art forms.

Prerequisites

Students must possess a fundamental set of skills on their chosen instrument, reflective of participation of band throughout elementary and middle school or similar experience. Any questions should be directed to the band director.

Guiding Principle(s)

Clear and effective communicator
Integrative and informed thinker
Creative and practical problem solver
Self-directed, life-long learner
Responsible and involved

Assessments

Performances
Playing Quizzes
Written assignments

Resources

In this course we will use a variety of pieces from the wind band repertoire. Students will not repeat any major pieces within their four years at Mt. Ararat.



Wind Ensemble

Music • 11-12 • Full Year • 1 Credit

Course Description

In this course students will perform and learn about a variety of pieces from the concert band repertoire, playing more advanced music and going into more detail than the concert band. Throughout the year students will perform in a variety of settings including school concerts, festivals, competitions and pep band games. In the Spring the band also marches in the memorial day parade. Students must audition in order to be eligible for this group.

Units of Study w/ Essential Questions

Balance: How do we create a balanced ensemble sound?

Technique: How can we further develop our individual technique to play increasingly complex passages?

Intonation: What must we do as individuals and as a group to play in tune?

Interpretation: What are the musical, emotional or literal meanings behind a piece of music? How can we express that in our performance?

Context: How can current and historical events influence a piece of music, in both its conception and performance?

Repertoire: What is the band repertoire? Who are some important composers? What do pieces from different time periods and countries sound like?

Creation: What are some considerations that go into writing a piece of music?

Ensemble: What are the differences between Wind Ensemble, Marching Band and Pep Band?

Community: How can we contribute to our local and school community through music?

Course Learning Goals

1. Students will demonstrate how understanding the style, genre, and context of a varied repertoire of music informs prepared performances as well as performers' technical skill to connect with the audience.
2. Students will develop, apply, and refine appropriate rehearsal strategies to address individual and ensemble challenges in a varied repertoire of music.
3. Students will demonstrate an understanding and mastery of the technical demands and expressive qualities of the music through prepared performances of a varied repertoire representing diverse cultures, styles, genres, and historical periods.
4. Students will justify interpretations of the expressive intent and meaning of musical works by comparing and synthesizing varied researched sources, including reference to other art forms.

Prerequisites

Students must audition for the instructor in order to be accepted. It is expected that students will be able to play major scales up to three sharps and flats, chromatic scale, and an Etude predetermined by the instructor.

Guiding Principle(s)

Clear and effective communicator

Integrative and informed thinker

Creative and practical problem solver

Self-directed, life-long learner

Responsible and involved

Assessments

Performances

Playing Quizzes

Written assignments

Resources

In this course we will use a variety of pieces from the wind band repertoire. Students will not repeat any major pieces within their four years at Mt. Ararat.

Concert Choir

Music • 9-12 • Full Year • 1 Credit

Course Description

In this course students will perform and learn about a variety of pieces from the concert choir repertoire. Students will perform in two evening concerts over the course of the year. In order to be in the concert choir, a student must demonstrate a proficiency level that shows the student can be a contributing choir member.

Units of Study w/ Essential Questions

Balance: How do we create a balanced ensemble sound?

Technique: How can we further develop our individual vocal technique?

Intonation: What must we do as individuals and as a group to sing in tune?

Interpretation: What are the musical, emotional or literal meanings behind a piece of music? How can we express that in our performance?

Context: How can current and historical events influence a piece of music, in both its conception and performance?

Repertoire: What is the band repertoire? Who are some important composers? What do pieces from different time periods and countries sound like?

Creation: What are some considerations that go into writing a piece of music?

Ensemble: What are the differences between the types of choirs?

Community: How can we contribute to our local and school community through music?

Course Learning Goals

1. Students will demonstrate how understanding the style, genre, and context of a varied repertoire of music informs prepared performances as well as performers' technical skill to connect with the audience.
2. Students will develop, apply, and refine appropriate rehearsal strategies to address individual and ensemble challenges in a varied repertoire of music.
3. Students will demonstrate an understanding and mastery of the technical demands and expressive qualities of the music through prepared performances of a varied repertoire representing diverse cultures, styles, genres, and historical periods.
4. Students will justify interpretations of the expressive intent and meaning of musical works by comparing and synthesizing varied researched sources, including reference to other art forms.

Prerequisites

Students must demonstrate a basic level of vocal ability through a voice check with the instructor or can be placed based on recommendation from their previous choral teacher (Mt. Ararat Middle School or another school if transferring in the district).

Guiding Principle(s)

Clear and effective communicator

Integrative and informed thinker

Creative and practical problem solver

Self-directed, life-long learner

Responsible and involved

Assessments

Performances
Playing Quizzes
Written assignments

Resources

In this course we will use a variety of pieces from the SAB and SATB choir repertoire. Students will not repeat any major pieces within their four years at Mt. Ararat.



Mt. Ararat High School Course Syllabus

Treble Choir

Music • 9-12 • Full Year • 1 Credit

Course Description

In this course students will perform and learn about a variety of pieces from the advanced choral repertoire, performing more advanced music and going into more detail than the concert choir. Throughout the year students will perform in a variety of settings including school concerts, festivals, and community performances. Students must audition in order to be eligible for this group.

Units of Study w/ Essential Questions

Balance: How do we create a balanced ensemble sound?

Technique: How can we further develop our individual vocal technique?

Intonation: What must we do as individuals and as a group to sing in tune?

Interpretation: What are the musical, emotional or literal meanings behind a piece of music? How can we express that in our performance?

Context: How can current and historical events influence a piece of music, in both its conception and performance?

Repertoire: What is the band repertoire? Who are some important composers? What do pieces from different time periods and countries sound like?

Creation: What are some considerations that go into writing a piece of music?

Ensemble: What are the differences between the types of choirs?

Community: How can we contribute to our local and school community through music?

Course Learning Goals

1. Students will demonstrate how understanding the style, genre, and context of a varied repertoire of music informs prepared performances as well as performers' technical skill to connect with the audience.
2. Students will develop, apply, and refine appropriate rehearsal strategies to address individual and ensemble challenges in a varied repertoire of music.
3. Students will demonstrate an understanding and mastery of the technical demands and expressive qualities of the music through prepared performances of a varied repertoire representing diverse cultures, styles, genres, and historical periods.
4. Students will justify interpretations of the expressive intent and meaning of musical works by

comparing and synthesizing varied researched sources, including reference to other art forms.

Prerequisites

Students must audition for the instructor in order to be accepted.

Guiding Principle(s)

Clear and effective communicator
Integrative and informed thinker
Creative and practical problem solver
Self-directed, life-long learner
Responsible and involved

Assessments

Performances
Playing Quizzes
Written assignments

Resources

In this course we will use a variety of pieces from the advanced SSAA choir repertoire. Students will not repeat any major pieces within their four years at Mt. Ararat.



Beginning Guitar

Music • 9-12 • 1 semester • 0.5 Credit

Course Description

This course is designed for the absolute beginning guitar student (no experience necessary) or someone who may wish to become proficient in any of the course learning goals. Students are welcome to use their own guitar (classical with nylon strings preferred) or they may use a school guitar for the duration of the course on a first come basis. This class does not perform any public concerts.

Units of Study w/ Essential Questions

Literacy: How can we read and interpret various forms of musical notation?

Rhythm: How do we interpret and notate various rhythms?

Technique: How can we further develop our individual technique to play increasingly complex pieces?

Harmony: What are chords and how do they function together in a piece of music?

Practice: How can we break down a complex piece of music into something that we can learn?

Creation: What are some considerations that go into writing a piece of music?

Repertoire: What are the various styles of music that use guitar? What are some notable pieces?

Course Learning Goals

1. Students will demonstrate how understanding the style, genre, and context of a varied repertoire of music informs prepared performances as well as performers' technical skill to connect with the audience.
2. Students will develop, apply, and refine appropriate rehearsal strategies to address individual challenges in a varied repertoire of music.

3. Students will demonstrate an understanding and mastery of the technical demands and expressive qualities of the music through prepared performances of a varied repertoire representing diverse cultures, styles, genres, and historical periods.
4. Students will justify interpretations of the expressive intent and meaning of musical works by comparing and synthesizing varied researched sources, including reference to other art forms.

Prerequisites

There are no prerequisites for this course, we will supply everything you need. Course size is capped at 10-12 per section.

Guiding Principle(s)

Clear and effective communicator
Integrative and informed thinker
Creative and practical problem solver
Self-directed, life-long learner
Responsible and involved

Assessments

Performances
Playing Quizzes
Written assignments

Resources

In this course we will use the Mel Bay Modern Guitar Method volumes 1 and 2, littkekidsrock.org, and various other supplemental materials.



Physical Education

I

Physical Education • 9 • 1 semester • 0.5 Credit

Course Description

This course introduces students to the foundations of physical conditioning and personal wellness and teaches them how to assess their strength, flexibility, muscular endurance, and cardiovascular fitness. Students must complete specific common assessments that demonstrate achievement of the State Learning Standards in physical education. Students also participate in various types of fitness and individual lifetime activities.

Units of Study w/ Essential Questions

How do I assess my current level of fitness?
How do I create fitness goals based off my fitness assessment?
What are the 5 Components of Health Related Fitness?
How do I create a personal fitness plan based off my fitness assessment and goals?
How do I apply my personal fitness plan?
How should my personal fitness program change over time?
How do I know if my personal fitness program is working?

Course Learning Goals

1. Demonstrate understanding of the five health related fitness components and the principles of training (specificity, overload, and progression).
2. Participate in a health-related fitness assessment to establish personal fitness goals and reassess their fitness over time. Assessed during Fitness Pre and Post Tests as well as individualized fitness program designs.
3. Design and critique a personal fitness plan, from established goals, that applies the principles of training.
4. Select and participate in physical activities that address their personal fitness plans and apply the five health-related fitness components.
5. Demonstrate responsible and ethical personal behavior while participating in physical activities.

Prerequisites

None

Guiding Principle(s)

Collaboration and/or Social Responsibility

Assessments

1. Quizzes and final exam
2. Fitness tests
3. Design fitness plan
4. Participate in physical fitness activities
5. Daily participation and behaviors

Resources

Google classroom website, lectures, handouts, and study guides.

Mt. Ararat High School Course Syllabus

Physical Education II

Physical Education • 10 • 1 semester • 0.5 Credit

Course Description

Students are introduced to and select from a variety of recreational and lifetime activities to fulfill Maine's PE requirement. In this course, students have the opportunity to explore and participate in activities that are designed to enhance personal fitness and cognitive, social, and psychomotor skills. Students in this course must also complete specific common assessments that demonstrate their achievement of the State Learning Standards in physical education.

Units of Study w/ Essential Questions

Ultimate Frisbee, Flag Football, Softball, Golf, Disc Golf, Volleyball, Floor Hockey, Team Handball, Archery, Badminton and Pickleball

How do the Six Skill Related Fitness Components relate to the specific unit of study?

What are the rules related to the specific unit of study?

What are the skills related to the specific unit of study?

What are the strategies related to the specific unit of study?

Course Learning Goals

1. Explain the relationship of fitness skill components to specialized movement skills.
2. Demonstrate a variety of specialized movement skills specific to game/physical activity while participating in that game/physical activity.
3. Demonstrate responsible and ethical personal behavior while participating in physical activities.

Prerequisites

Successful completion of PE 1

Guiding Principle(s)

Self Directed and Lifelong Learner
Responsible and Involved Citizen

Assessments

1. Explain the relationship of fitness skill components to specialized movement skills.
2. Demonstrate a variety of specialized movement skills specific to game/physical activity while participating in that game/physical activity.
3. Demonstrate responsible and ethical personal behavior while participating in physical activities.

Resources

Unit handouts detailing strategies, skill cues, safety and rules
Various YouTube instructional videos
Google Classroom

Mt. Ararat High School Course Syllabus

Outdoor Education

Physical Education • 9 • 1 semester • 0.5 Credit

Course Description

This course provides students with an alternative way to fulfill Maine's PE requirement. Coursework introduces students to lifelong activities in an outdoor setting. Activities may include biking, cross country skiing, snowshoeing, archery, and disc golf.

Units of Study w/ Essential Questions

Activities may include: Biking, cross country skiing, snowshoeing, archery, disc golf, hiking, orienteering, survival skills

What are the skills related to the specific unit of study?

How do the Six Skill Related Fitness Components relate to the specific unit of study?

Course Learning Goals

1. Demonstrate a variety of specialized movement skills specific to game/physical activity while participating in that game/physical activity.
2. Demonstrate responsible and ethical personal behavior while participating in physical activities

Prerequisites

Successful completion of PE I

Guiding Principle(s)

Self Directed and Lifelong Learner
Responsible and Involved Citizen

Assessments

Self-reflections
Safety Assessments
Demonstrate responsible and ethical personal behavior while participating in physical activities.

Resources

Various handouts
Videos
Google Classroom



Mt. Ararat High School Course Syllabus

Physical Science

Science • 9 • Full Year • 1 Credit

Course Description

This rigorous course provides students with an opportunity for a laboratory science experience in the first year of high school. Lessons are structured to help students gain a deep understanding of content through experimentation and data analysis. There is a focus on developing critical scientific skills, practices, and habits of mind. Topics include: scientific methods, chemistry of the universe, classification and interactions of matter, Earth cycles and systems, energy, and human activity and the environment. Students are expected to maintain a science notebook and complete daily assignments.

Units of Study w/ Essential Questions

1. Scientific Practices and Safety
 - a. What type of questions and hypotheses can be answered by science?
 - b. What are some ways science is done?
 - c. How do we know if data is accurate?
 - d. How do we ensure that scientific investigations are both safe and consistent with scientific practice?
 - e. How do we know the conclusions of a scientific investigation is valid?
2. Chemistry: Matter, atoms, periodic table, and chemical reactions
 - a. How can one explain the structure, properties, and interactions of matter?
 - i. How do particles combine to form the variety of matter one observes?
 - ii. How do substances combine or change (react) to make new substances?
 - iii. How does one characterize and explain these reactions and make predictions about them?
3. Astronomy: Solar System and Stars
 - a. What is the universe, and what is Earth's place in it?

- b. What is the universe, and what goes on in stars?
- 4. Earth Systems: Carbon Cycle and Climate Change
 - a. How and why is Earth constantly changing?
 - b. How do Earth's major systems interact?
- 5. Energy Conservation and Engineering Solutions
 - a. How do engineers solve problems?
 - i. What are the criteria and constraints of a successful solution?
 - ii. What is the process for developing potential design solutions?
 - iii. How can the various proposed design solutions be compared and improved?

Course Learning Goals

1. Properties of Elements: Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.
2. Chemical Reactions: Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.
3. Energy Conversion: Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.
4. Energy from Stars: Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.
5. Big Bang Theory: Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.
6. Elements in Stars: Communicate scientific ideas about the way stars, over their life cycle, produce elements.
7. Earth's Systems: Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.
8. Energy & Climate: Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.
9. Carbon Cycle: Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.
10. Climate Change: Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.
11. Human Impacts on Earth: Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
12. Engineering Designs & Solutions: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
13. Engineering, Technology, & Science: Demonstrate an understanding of the interrelationships between science, engineering, and technology.

Prerequisites

Middle School Science

Guiding Principle(s)

Clear and effective communicator

Self directed and lifelong learner

Creative and practical problem solver

Responsible and involved citizen

Integrative and informed thinker

Assessments

Various formative assessments

Projects and presentations

Lab responses and lab reports

Unit tests

Midterm assessment

Engineering design project

Resources

Feather, R. M. Jr., McLaughlin, C. W., Thompson, M., & Zike, D (2006). *Physical Science with Earth Science (2nd?)*. Columbus, OH: Glencoe/McGraw-Hill.

PhET Interactive Simulations (2019). Boulder, CO: University of Colorado Boulder.
<https://phet.colorado.edu/>

Other videos, simulations, interactives, and websites as listed on the corresponding assignments.



Mt. Ararat High School Course Syllabus

Academic Physical Science

Science • 9 • Full Year • 1 Credit

Course Description

This rigorous course provides students with an opportunity for a laboratory science experience in the first year of high school. Lessons are structured to help students gain a deep understanding of content through experimentation and data analysis. There is a focus on developing critical scientific skills, practices, and habits of mind. Topics include: scientific practices, measurement, the Solar System, the Universe, matter, Earth's interior, Earth's atmosphere and hydrosphere, climate change, and human impacts on Earth's systems. There is an emphasis on the physical aspects of these systems. Students are expected to maintain a science notebook and complete daily assignments.

Units of Study w/ Essential Questions

1. Measurement, Safety, and Scientific Practices
2. The Solar System
3. The Universe

4. Earth's Interior
5. Earth's Atmosphere and Hydrosphere
6. Climate Change
7. Human Impacts on Earth's Systems

What skills and practices are essential to scientific thinking and processes?

What skills and practices are necessary for students to effectively grow into (a) creative and practical problem solvers, and (b) integrative and informed thinkers?

What is the universe, and what is Earth's place in it?

What are the predictable patterns caused by Earth's movement in the solar system?

What is the universe, and what goes on in stars?

How do people reconstruct and date events in Earth's planetary history?

How and why is Earth constantly changing?

How do Earth's major systems interact?

Why do the continents move, and what causes earthquakes and volcanoes?

How do we know what we do about Earth?

What regulates weather and climate?

How do the properties and movements of water shape Earth's surface and affect its systems?

How do living organisms alter Earth's processes and structures?

How do Earth's surface processes and human activities affect each other?

How do people model and predict the effects of human activities on Earth's climate?

How do natural hazards affect individuals and societies?

How do Earth's surface processes and human activities affect each other?

How do humans change the planet?

How do humans depend on Earth's resources?

How are engineering, technology, science, and society interconnected?

How do science, engineering, and the technologies that result from them affect the ways in which people live?

How do they affect the natural world?

Course Learning Goals

Students will be able to

1. Ask questions and define problems
2. Plan and carry out investigations
3. Analyze and interpret data
4. Use mathematics and computational thinking
5. Obtain, evaluate, and communicate information

Student demonstrates an understanding of:

A. The Solar System

1. Gravity as an attractive force influenced by the mass of objects and the distance between them.
2. The orbital features of objects in the solar system.

B. The Universe

1. The life span of the Sun.
2. The role of nuclear fusion in the Sun's core to release generate that eventually reaches Earth in the form of radiation.
3. The production of elements in stars over their life cycles.

C. Earth's Interior

1. The structure and composition of Earth's interior.
2. The techniques used by scientists to investigate and understand Earth's interior.
3. The cycling of matter within Earth's interior.

D. Earth's Atmosphere and Hydrosphere

1. Variations in the flow of energy into and out of Earth's systems result in changes in climate.
2. The cycling of carbon among Earth's hydrosphere, atmosphere, geosphere, and biosphere.

E. Climate Change

1. The factors influencing global and/or regional climate change and their associated rates.
2. The variables that are important to monitoring and predicting global climate change.
3. The potential impacts of natural events and hazards on global climate.
4. The effects of natural resource availability and natural hazards on human behaviors.

F. Human Impacts on Earth's Systems

1. The costs, risks, and benefits of resource extraction and energy production.
2. Systems engineered by humans to produce and utilize energy.
3. Relationships among Earth's systems and how those systems and relationships are being affected by human behaviors.
4. Ways in which human activities can be modified to lessen their impacts on Earth's systems.

Prerequisites

Middle School Science

Guiding Principle(s)

Clear and effective communicator

Self directed and lifelong learner

Creative and practical problem solver

Responsible and involved citizen

Integrative and informed thinker

Assessments

Various formative assessments

Projects and presentations

Lab responses and lab reports

Unit tests

Midterm assessment

Engineering design project

Resources

Feather, R. M. Jr., McLaughlin, C. W., Thompson, M., & Zike, D (2006). *Physical Science with Earth Science (2nd?)*. Columbus, OH: Glencoe/McGraw-Hill.

PhET Interactive Simulations (2019). Boulder, CO: University of Colorado Boulder.
<https://phet.colorado.edu/>

Other videos, simulations, interactives, and websites as listed on the corresponding assignments.

Advanced Physical Science

Science • 9 • Full Year • 1 Credit

Course Description

This level of physical science is more demanding than Academic Physical Science. It provides students with an opportunity for a laboratory science experience in the first year of high school. Lessons are structured to help students gain a deep understanding of content through experimentation and data analysis. There is a focus on developing critical scientific skills, practices, and habits of mind. As compared to academic physical science, there is an even greater expectation concerning the responsibility of the student in the learning process. The approach of this course allows for a deeper exploration of topics, and requires very strong math skills along with the ability to work independently. Students must complete department screening process and required summer work. Topics include: scientific practices, measurement, the Solar System, the Universe, matter, Earth's interior, Earth's atmosphere and hydrosphere, climate change, and human impacts on Earth's systems. There is an emphasis on the physical aspects of these systems. Students are expected to maintain a science notebook and complete daily assignments.

Units of Study w/ Essential Questions

1. Measurement, Safety, and Scientific Practices
2. The Solar System
3. The Universe
4. Earth's Interior
5. Earth's Atmosphere and Hydrosphere
6. Climate Change
7. Human Impacts on Earth's Systems

What skills and practices are essential to scientific thinking and processes?

What skills and practices are necessary for students to effectively grow into (a) creative and practical problem solvers, and (b) integrative and informed thinkers?

What is the universe, and what is Earth's place in it?

What are the predictable patterns caused by Earth's movement in the solar system?

What is the universe, and what goes on in stars?

How do people reconstruct and date events in Earth's planetary history?

How and why is Earth constantly changing?

How do Earth's major systems interact?

Why do the continents move, and what causes earthquakes and volcanoes?

How do we know what we do about Earth?

What regulates weather and climate?

How do the properties and movements of water shape Earth's surface and affect its systems?

How do living organisms alter Earth's processes and structures?

How do Earth's surface processes and human activities affect each other?

How do people model and predict the effects of human activities on Earth's climate?

How do natural hazards affect individuals and societies?

How do Earth's surface processes and human activities affect each other?

How do humans change the planet?

How do humans depend on Earth's resources?

How are engineering, technology, science, and society interconnected?

How do science, engineering, and the technologies that result from them affect the ways in which people live?
How do they affect the natural world?

Course Learning Goals

Students will be able to

1. Ask questions and define problems
2. Plan and carry out investigations
3. Analyze and interpret data
4. Use mathematics and computational thinking
5. Obtain, evaluate, and communicate information

Student demonstrates an understanding of:

A. The Solar System

1. Gravity as an attractive force influenced by the mass of objects and the distance between them.
2. The orbital features of objects in the solar system.

B. The Universe

1. The life span of the Sun.
2. The role of nuclear fusion in the Sun's core to release energy that eventually reaches Earth in the form of radiation.
3. The production of elements in stars over their life cycles.

C. Earth's Interior

1. The structure and composition of Earth's interior.
2. The techniques used by scientists to investigate and understand Earth's interior.
3. The cycling of matter within Earth's interior.

D. Earth's Atmosphere and Hydrosphere

1. Variations in the flow of energy into and out of Earth's systems result in changes in climate.
2. The cycling of carbon among Earth's hydrosphere, atmosphere, geosphere, and biosphere.

E. Climate Change

1. The factors influencing global and/or regional climate change and their associated rates.
2. The variables that are important to monitoring and predicting global climate change.
3. The potential impacts of natural events and hazards on global climate.
4. The effects of natural resource availability and natural hazards on human behaviors.

F. Human Impacts on Earth's Systems

1. The costs, risks, and benefits of resource extraction and energy production.
2. Systems engineered by humans to produce and utilize energy.
3. Relationships among Earth's systems and how those systems and relationships are being affected by human behaviors.
4. Ways in which human activities can be modified to lessen their impacts on Earth's systems.

Prerequisites

Middle School Science

Advanced Algebra I

Department screening including successful completion of summer work

Guiding Principle(s)

Clear and effective communicator

Self directed and lifelong learner
Creative and practical problem solver
Responsible and involved citizen
Integrative and informed thinker

Assessments

Various formative assessments
Projects and presentations
Lab responses and lab reports
Unit tests
Midterm assessment
Engineering design project

Resources

Feather, R. M. Jr., McLaughlin, C. W., Thompson, M., & Zike, D (2006). *Physical Science with Earth Science (2nd?)*. Columbus, OH: Glencoe/McGraw-Hill.

PhET Interactive Simulations (2019). Boulder, CO: University of Colorado Boulder.
<https://phet.colorado.edu/>

Other videos, simulations, interactives, and websites as listed on the corresponding assignments.

Mt. Ararat High School Course Syllabus

Biology

Science • 10 • Full Year • 1 Credit

Course Description

This course is designed to provide a fundamental understanding of the principles of biology. Topics include: molecular biology, ecology, cells, heredity and reproduction, and evolution. The course includes experimentation and data analysis. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. Students are encouraged to assume more independent roles and responsibilities in the learning process. Students are expected to maintain a science notebook and complete daily assignments. Projects involving library research, independent research, and presentations are also required.

Units of Study w/ Essential Questions

1. Life Characteristics
 - a. How can it be determined if something is living or non living?
 - b. What characteristics do all living things have in common?
2. Ecology/Environment
 - a. How and why do organisms interact with their environment, and what are the effects of these interactions?
 - b. How do organisms obtain and use the matter and energy they need to live and grow? (may be done in Cells)
 - c. How do matter and energy move through an ecosystem?
 - d. What happens to ecosystems when the environment changes?
3. Cellular & Molecular Biology
 - a. How do organisms grow and develop?

- b. How do organisms obtain and use the matter and energy they need to live and grow? (may be done in Ecology)
- 4. Genetics & Inheritance, DNA & Protein
 - a. How do organisms live, grow, respond to their environment, and reproduce?
 - b. How are characteristics of one generation passed to the next?
 - c. How can individuals of the same species and even siblings have different characteristics?
- 5. Natural Selection & Evolution
 - a. How can there be so many similarities among organisms yet so many different kinds of plants, animals, and microorganisms?
 - b. Why is biodiversity important?

Course Learning Goals

- 1. Ecology/Environment
 - a. Demonstrates an understanding of the cycling of matter and flow of energy among organisms in ecosystems.
 - b. Demonstrates an understanding of the role of photosynthesis and cellular respiration in the cycling of carbon between the biosphere, atmosphere, oceans, and geosphere.
 - c. Demonstrates an understanding of the stability of organisms in ecosystems.
 - d. Demonstrates an understanding of factors that affect carrying capacity of ecosystems at different scales.
 - e. Demonstrates an understanding of how photosynthesis transforms light energy into stored chemical energy.
- 2. (may be done in cells)
 - a. Demonstrates an understanding of the role that carbon, hydrogen, and oxygen in sugar molecules play in forming the basic molecules of living systems. (may be done in cells)*
 - b. Demonstrates an understanding of cellular respiration and its implications in living systems. (may be done in cells)*
 - c. Demonstrates an understanding of the cycling of matter and flow of energy in aerobic and anaerobic conditions. (may be done in cells)*
- 3. Cellular & Molecular Biology
 - a. Demonstrates an understanding of the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.
 - b. Demonstrates an understanding of how photosynthesis transforms light energy into stored chemical energy.
 - c. Demonstrates an understanding of the role that carbon, hydrogen, and oxygen in sugar molecules play in forming the basic molecules of living systems.(may be done in Ecology)*
 - d. Demonstrates an understanding of cellular respiration and its implications in living systems. *(may be done in Ecology)
- 4. Genetics & Inheritance, DNA & Protein
 - a. Demonstrates an understanding of the variables (meiosis, Mendelian Genetics, environmental influences) affecting inheritable genetic variations that can lead to understanding variation and distribution of expressed traits in a population.
 - b. Demonstrates an understanding of the role of chromosomal DNA in coding the instructions for characteristic traits passed from parents to offspring.
 - c. Demonstrates an understanding of the role of DNA & protein, such as enzymes, in life's functions.
- 5. Natural Selection & Evolution
 - a. Demonstrates an understanding of natural selection and the adaptation of populations of organisms.
 - b. Demonstrates an understanding that common ancestry and biological evolution are supported by multiple lines of empirical evidence.

Prerequisites

9th Grade Physical Science

Guiding Principle(s)

Clear and effective communicator
Self directed and lifelong learner
Creative and practical problem solver
Responsible and involved citizen
Integrative and informed thinker

Assessments

Energy Flow and Cycling of Matter Assessment
Population Assessment
Enzyme Assessment
Photosynthesis/Respiration Assessment
Cell Division Assessment
DNA to Protein Assessment
Genetic Disorder Assessment
Natural Selection Assessment
Evidence For Evolution Assessment

Resources

Biggs, Alton, and Hagins Crispen Whitney. *Glencoe Science Biology*. McGraw-Hill Education, 2009.
Other resources may include various educational websites, informative videos & other materials available through the Learning Commons.

Mt. Ararat High School Course Syllabus

Advanced Biology

Science • 10 • Full Year • 1 Credit

Course Description

This level of biology is more demanding than Academic Biology. Topics include: molecular biology, ecology, cells, heredity and reproduction, and evolution. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. As compared to academic biology, there is an even greater expectation concerning the responsibility of the student in the learning process. Very strong work ethic and writing proficiency are essential for student success. Frequent lab exercises, independent projects with oral presentations, readings, homework, will be part of the course expectations. Students are expected to conduct a research project, complete extra readings, and keep an ecology journal. Students must complete the department screening process and the required summer work.

Units of Study w/ Essential Questions

1. Life Characteristics
 - a. How can it be determined if something is living or non living?
 - b. What characteristics do all living things have in common?
2. Ecology/Environment
 - a. How and why do organisms interact with their environment, and what are the effects of these interactions?

- b. How do organisms obtain and use the matter and energy they need to live and grow? (may be done in Cells)
- c. How do matter and energy move through an ecosystem?
- d. What happens to ecosystems when the environment changes?
- 3. Cellular & Molecular Biology
 - a. How do organisms grow and develop?
 - b. How do organisms obtain and use the matter and energy they need to live and grow? (may be done in Ecology)
- 4. Genetics & Inheritance, DNA & Protein
 - a. How do organisms live, grow, respond to their environment, and reproduce?
 - b. How are characteristics of one generation passed to the next?
 - c. How can individuals of the same species and even siblings have different characteristics?
- 5. Natural Selection & Evolution
 - a. How can there be so many similarities among organisms yet so many different kinds of plants, animals, and microorganisms?
 - b. Why is biodiversity important?

Course Learning Goals

1. Ecology/Environment
 - a. Demonstrates an understanding of the cycling of matter and flow of energy among organisms in ecosystems.
2. Demonstrates an understanding of the role of photosynthesis and cellular respiration in the cycling of carbon between the biosphere, atmosphere, oceans, and geosphere.
 - a. Demonstrates an understanding of the stability of organisms in ecosystems.
 - b. Demonstrates an understanding of factors that affect carrying capacity of ecosystems at different scales.
3. Demonstrates an understanding of how photosynthesis transforms light energy into stored chemical energy. (may be done in cells)
4. Demonstrates an understanding of the role that carbon, hydrogen, and oxygen in sugar molecules play in forming the basic molecules of living systems. (may be done in cells)*
5. Demonstrates an understanding of cellular respiration and its implications in living systems. (may be done in cells)*
6. Demonstrates an understanding of the cycling of matter and flow of energy in aerobic and anaerobic conditions. (may be done in cells)*
7. Cellular & Molecular Biology
 - a. Demonstrates an understanding of the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.
 - b. Demonstrates an understanding of how photosynthesis transforms light energy into stored chemical energy.
8. Demonstrates an understanding of the role that carbon, hydrogen, and oxygen in sugar molecules play in forming the basic molecules of living systems. (may be done in Ecology)*
 - a. Demonstrates an understanding of cellular respiration and its implications in living systems. *(may be done in Ecology)
9. Genetics & Inheritance, DNA & Protein
 - a. Demonstrates an understanding of the variables (meiosis, Mendelian Genetics, environmental influences) affecting inheritable genetic variations that can lead to understanding variation and distribution of expressed traits in a population.
 - b. Demonstrates an understanding of the role of chromosomal DNA in coding the instructions for characteristic traits passed from parents to offspring.
 - c. Demonstrates an understanding of the role of DNA & protein, such as enzymes, in life's functions.
10. Natural Selection & Evolution
 - a. Demonstrates an understanding of natural selection and the adaptation of populations of

- organisms.
- b. Demonstrates an understanding that common ancestry and biological evolution are supported by multiple lines of empirical evidence.

Prerequisites

9th Grade Physical Science, Algebra I; department screening including successful completion of summer work

Guiding Principle(s)

Clear and effective communicator
Self directed and lifelong learner
Creative and practical problem solver
Responsible and involved citizen
Integrative and informed thinker

Assessments

Energy Flow and Cycling of Matter Assessment
Population Assessment
Enzyme Assessment
Photosynthesis/Respiration Assessment
Cell Division Assessment
DNA to Protein Assessment
Genetic Disorder Assessment
Natural Selection Assessment
Evidence For Evolution Assessment

Resources

Honors Biology uses Reece, Jane B. *Campbell biology: concepts and connections*. Pearson, 2015.

Mt. Ararat High School Course Syllabus

Chemistry

Science • 11 • Full Year • 1 Credit

Course Description

Chemistry is the study of the components of matter and how these components behave and interact with one another. The course will include lectures, daily assignments, and laboratory experiments. The periodic table of elements will be studied and analyzed throughout the class to increase understanding of the various components of matter and energy. Students will be expected to work simple mathematical computations and complete outside assignments throughout the course.

Units of Study w/ Essential Questions

1. Foundations of Chemistry
Why should I care about science and chemistry?
How do chemists use the techniques of science to study the matter that makes up our world?
2. Data Analysis
Why use math in chemistry?
What sort of data is significant?

3. Matter & Its Properties
 - What's the difference between solids, liquids and gases?*
 - Why are elements found in different phases?*
 - How do we tell the difference between elements, compounds, and mixtures?*
4. Atomic Structure & Theory
 - How has scientific history led us to our modern understanding about the fundamental nature of matter?*
 - What is inside an atom? What makes the atom of an element unique?*
5. Periodic Table & Trends
 - How is the periodic table structured and understood to reveal helpful patterns in characteristic information about the atoms of specific elements and how they interact?*
6. Electrons in Atoms
 - How are energy and light related?*
 - How are the interactions between electrons and energy explained by the wave-mechanical atomic model suggesting that electrons are housed in specific probability clouds?*
7. Chemical Bonding
 - Why does the arrangement of valence electrons in an atom govern how that atom bonds and orients with other atoms in 3-dimensional molecules?*
 - How do we get chemical formulas from names?*
 - How do ionic and covalent bonding differ?*
8. Chemical Reactions
 - How are the products accurately predicted for a variety of different classifications of atomic interactions?*
 - How does the Law of Conservation of Mass apply in Chemistry?*
9. The Mole
 - What the heck is a mole, anyway?*
 - How can we tell what a compound is made of?*
10. Stoichiometry
 - Why do reactions stop?*
 - How do I know how much of a product will form in a reaction?*
11. Gases
 - How do gases differ from solids and liquids?*
 - What gases are in the atmosphere and what do they do?*
12. Solutions and Equilibrium
 - Why are some things soluble in water and others aren't?*
 - How does water act as a solvent?*
 - What does it mean if something is "concentrated?"*
 - What happens when reactions appear to have stopped?*
13. Acids & Bases
 - What makes an acid or base strong or weak?*
 - How does concentration affect pH?*
 - What is a neutralization reaction?*
14. Thermochemistry
 - Do all reactions produce heat?*
 - Why does ice melt?*
15. Reaction Rates
 - How fast do reactions occur?*
 - Why do some occur at different rates?*
16. Nuclear Chemistry
 - What distinguishes a nuclear reaction from an ordinary chemical reaction?*
 - How can atoms of one element change into atoms of another?*

Course Learning Goals

- Use the periodic table as a model to predict the relative properties of elements based on the pattern

of electrons in the outermost energy level of atoms.

- Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties. (Proficiency data point)
- Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles. (Proficiency data point)
- Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.
- Apply scientific principles and evidence to provide an explanation about the effect of changing the temperature and concentration of the reacting particles on the rate at which a reaction occurs.
- Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.
- Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction. (Proficiency data point)
- Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.
- Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperatures are combined within a closed system results in a more uniform energy distribution among components in the system (second law of thermodynamics). (Proficiency data point)
- Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

Prerequisites

Successful completion of Physical Science and Biology courses.

Guiding Principle(s)

Clear and Effective Communicator

Self-Directed and Lifelong Learner

Creative and Practical Problem Solver

Assessments

Assessments will be both formative and summative in nature. These assessments will include classwork and homework, quizzes, tests, and laboratory assignments.

Resources

Dingrando, L., Tallman, K. G., Hainen, N., & Wistrom, C. (2005). *Chemistry: Matter and change*. Columbus, OH: Glencoe/McGraw-Hill.

The logo for Mt. Ararat High School Course Syllabus consists of a red vertical bar on the left and a blue horizontal bar on the right. The text "Mt. Ararat High School Course Syllabus" is written in white on the blue bar.

Academic Chemistry

Science • 11 • Full Year • 1 Credit

Course Description

Academic Chemistry is the study of the components of matter and how these components behave and

interact with one another. The course will include lectures, daily assignments, and laboratory experiments. The periodic table of elements will be studied and analyzed throughout the class to increase understanding of the various components of matter and energy. Students will be expected to work simple mathematical computations and complete outside assignments throughout the course.

Units of Study w/ Essential Questions

1. Foundations of Chemistry
Why should I care about science and chemistry?
How do chemists use the techniques of science to study the matter that makes up our world?
2. Data Analysis
Why use math in chemistry?
What sort of data is significant?
3. Matter & Its Properties
What's the difference between solids, liquids and gases?
Why are elements found in different phases?
How do we tell the difference between elements, compounds, and mixtures?
4. Atomic Structure & Theory
How has scientific history led us to our modern understanding about the fundamental nature of matter?
What is inside an atom? What makes the atom of an element unique?
5. Periodic Table & Trends
How is the periodic table structured and understood to reveal helpful patterns in characteristic information about the atoms of specific elements and how they interact?
6. Electrons in Atoms
How are energy and light related?
How are the interactions between electrons and energy explained by the wave-mechanical atomic model suggesting that electrons are housed in specific probability clouds?
7. Chemical Bonding
Why does the arrangement of valence electrons in an atom govern how that atom bonds and orients with other atoms in 3-dimensional molecules?
How do we get chemical formulas from names?
How do ionic and covalent bonding differ?
8. Chemical Reactions
How are the products accurately predicted for a variety of different classifications of atomic interactions?
How does the Law of Conservation of Mass apply in Chemistry?
9. The Mole
What the heck is a mole, anyway?
How can we tell what a compound is made of?
10. Stoichiometry
Why do reactions stop?
How do I know how much of a product will form in a reaction?
11. Gases
How do gases differ from solids and liquids?
What gases are in the atmosphere and what do they do?
12. Solutions and Equilibrium
Why are some things soluble in water and others aren't?
How does water act as a solvent?
What does it mean if something is "concentrated?"
What happens when reactions appear to have stopped?
13. Acids & Bases
What makes an acid or base strong or weak?
How does concentration affect pH?
What is a neutralization reaction?

14. Thermochemistry
Do all reactions produce heat?
Why does ice melt?
15. Reaction Rates
How fast do reactions occur?
Why do some occur at different rates?
16. Nuclear Chemistry
How fast do reactions occur?
Why do some occur at different rates?

Course Learning Goals

- Use the periodic table as a model to predict the relative properties of elements based on the pattern of electrons in the outermost energy level of atoms.
- Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties. (Proficiency data point)
- Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles. (Proficiency data point)
- Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.
- Apply scientific principles and evidence to provide an explanation about the effect of changing the temperature and concentration of the reacting particles on the rate at which a reaction occurs.
- Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.
- Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction. (Proficiency data point)
- Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.
- Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperatures are combined within a closed system results in a more uniform energy distribution among components in the system (second law of thermodynamics). (Proficiency data point)
- Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

Prerequisites

Successful completion of Physical Science and Biology courses.

Guiding Principle(s)

Clear and Effective Communicator
Self-Directed and Lifelong Learner
Creative and Practical Problem Solver

Assessments

Assessments will be both formative and summative in nature. These assessments will include classwork and homework, quizzes, tests, and laboratory assignments.

Resources

Dingrando, L., Tallman, K. G., Hainen, N., & Wistrom, C. (2005). Chemistry: Matter and change. Columbus, OH: Glencoe/McGraw-Hill.

Advanced Chemistry

Science • 11 • Full Year • 1 Credit

Course Description

Advanced Chemistry is the study of the components of matter and how these components behave and interact with one another. The course will include lectures, daily assignments, and laboratory experiments. The periodic table of elements will be studied and analyzed throughout the class to increase understanding of the various components of matter and energy. Students will be expected to work simple mathematical computations and complete outside assignments throughout the course.

Units of Study w/ Essential Questions

1. Foundations of Chemistry
Why should I care about science and chemistry?
How do chemists use the techniques of science to study the matter that makes up our world?
2. Data Analysis
Why use math in chemistry?
What sort of data is significant?
3. Matter & Its Properties
What's the difference between solids, liquids and gases?
Why are elements found in different phases?
How do we tell the difference between elements, compounds, and mixtures?
4. Atomic Structure & Theory
How has scientific history led us to our modern understanding about the fundamental nature of matter?
What is inside an atom? What makes the atom of an element unique?
5. Periodic Table & Trends
How is the periodic table structured and understood to reveal helpful patterns in characteristic information about the atoms of specific elements and how they interact?
6. Electrons in Atoms
How are energy and light related?
How are the interactions between electrons and energy explained by the wave-mechanical atomic model suggesting that electrons are housed in specific probability clouds?
7. Chemical Bonding
Why does the arrangement of valence electrons in an atom govern how that atom bonds and orients with other atoms in 3-dimensional molecules?
How do we get chemical formulas from names?
How do ionic and covalent bonding differ?
8. Chemical Reactions
How are the products accurately predicted for a variety of different classifications of atomic interactions?
How does the Law of Conservation of Mass apply in Chemistry?
9. The Mole
What the heck is a mole, anyway?
How can we tell what a compound is made of?
10. Stoichiometry

Why do reactions stop?

How do I know how much of a product will form in a reaction?

11. Gases

How do gases differ from solids and liquids?

What gases are in the atmosphere and what do they do?

12. Thermochemistry

Do all reactions produce heat?

13. *Why does ice melt?* Solutions and Equilibrium

Why are some things soluble in water and others aren't?

How does water act as a solvent?

What does it mean if something is "concentrated?"

What happens when reactions appear to have stopped?

14. Acids & Bases

What makes an acid or base strong or weak?

How does concentration affect pH?

What is a neutralization reaction?

15. Reaction Rates

How fast do reactions occur?

Why do some occur at different rates?

16. Nuclear Chemistry

What distinguishes a nuclear reaction from an ordinary chemical reaction?

How can atoms of one element change into atoms of another?

17. Oxidation-Reduction Reactions

How do electrons behave in chemical reactions?

What are redox chemical reactions and why are they interdependent?

18. Electrochemistry

How does the temperature affect the rate of a reaction?

How does concentration affect the rate of reaction?

How do elementary reactions occur?

Why aren't all reactions occurring in one step?

How does the presence of a catalyst affect the rate of a reaction?

Course Learning Goals

- Use the periodic table as a model to predict the relative properties of elements based on the pattern of electrons in the outermost energy level of atoms.
- Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties. (Proficiency data point)
- Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles. (Proficiency data point)
- Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.
- Apply scientific principles and evidence to provide an explanation about the effect of changing the temperature and concentration of the reacting particles on the rate at which a reaction occurs.
- Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.
- Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction. (Proficiency data point)
- Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.
- Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperatures are combined within a closed system results in a more uniform energy distribution among components in the system (second law of thermodynamics). (Proficiency

data point)

- Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

Prerequisites

Successful completion of Physical Science and Biology courses.

Guiding Principle(s)

Clear and Effective Communicator

Self-Directed and Lifelong Learner

Creative and Practical Problem Solver

Assessments

Assessments will be both formative and summative in nature. These assessments will include classwork and homework, quizzes, tests, and laboratory assignments.

Resources

Dingrando, L., Tallman, K. G., Hainen, N., & Wistrom, C. (2005). Chemistry: Matter and change. Columbus, OH: Glencoe/McGraw-Hill.



Mt. Ararat High School Course Syllabus

Physics

Science • 12 • Full Year • 1 Credit

Course Description

This course is designed for students who plan to further their education beyond high school, but who have had difficulty mastering complex algebraic and trigonometric concepts. Lessons are designed to help students improve their problem solving and mathematical skills. Topics include: motion, forces, two-dimensional interactions, gravitation, orbital motion, impulse and momentum, energy and work, conservation of energy, electricity, and magnetism. The course explores the nature of physics conceptually, mathematically, and experimentally. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. There are strong expectations concerning the roles and responsibilities of students in the learning process. Students are expected to maintain a science notebook and complete daily assignments.

Units of Study w/ Essential Questions

Scientific Skills and Practices

Constant Velocity Motion

Uniformly Accelerated Motion

Forces in One Dimension

Forces in Two Dimensions

Uniform Circular Motion

Orbital Motion and Universal Gravitation

Impulse and Momentum

Energy and Work
Vibrations and Waves
Electric Charges and Forces
Applications of Electromagnetism

What are the skills and practices essential to scientific exploration and inquiry?
How can one explain the structure, properties, and interactions of matter?
How can one explain and predict interactions between objects and within systems of objects?
How can one predict an object's continued motion, changes in motion, or stability?
What underlying forces explain the variety of interactions observed?
Why are some physical systems more stable than others?
How is energy transferred and conserved?
What is energy?
What is meant by conservation of energy?
How is energy transferred between objects or systems?
How are forces related to energy?
If energy is conserved, why do people say it is produced or used?
How are waves used to transfer energy and information?
What are the characteristic properties and behaviors of waves?
What are the predictable patterns caused by Earth's movement in the solar system?
How do scientists and engineers solve problems?
What are the skills and practices essential to scientific exploration and inquiry?

Course Learning Goals

Students will be able to:

1. Ask questions and define problems
2. Develop and use models
3. Plan and carry out investigations
4. Analyze and interpret data
5. Use mathematics and computational thinking
6. Construct explanations and design solutions
7. Engage in argument from evidence
8. Obtain, evaluate, and communicate information

Students will demonstrate an understanding of:

1. Constant Velocity Motion
 - a. Systems and conventions used to describe and represent constant velocity motion
 - b. The motion of an object in one dimension with constant velocity
2. Uniformly Accelerated Motion
 - a. Systems and conventions used to describe and represent uniformly accelerated motion
 - b. The motion of an object in one dimension with uniform acceleration
 - c. The motion of an object experiencing uniform acceleration due to gravity only
3. Forces in One Dimension
 - a. Systems and conventions used to describe and represent forces acting upon an object
 - b. The behavior of objects of mass that are acted upon by a force or forces in one dimension
4. Forces in Two Dimensions
 - a. Systems and conventions used to describe and represent forces acting upon an object in two dimensions
 - b. The behavior of objects of mass as a function of being acted upon by a force or forces in two dimensions
 - c. The behavior of objects of mass as a function of experiencing frictional forces
5. Uniform Circular Motion

- a. The variables influencing the motion of objects while moving uniformly in a circle and experiencing a net inward force
 - b. The behavior of objects of mass that are moving uniformly in a circle and experiencing a net inward force
6. Orbital Motion and Universal Gravitation
 - a. The variables influencing the motion of orbiting bodies
 - b. The behavior of orbiting bodies
 - c. The gravitational attraction between two objects as a function of the variables influencing that attraction
 7. Impulse and Momentum
 - a. The relationship between impulse and change in momentum
 - b. The behavior within a system of objects experiencing a change in momentum
 8. Energy and Work
 - a. Systems and conventions used to describe and represent energy
 - b. The relationship between energy and work
 - c. The behavior of objects as a function of energy being both a conserved and transferable quantity
 9. Vibrations and Waves
 - a. The variables influencing an object experiencing simple harmonic motion
 - b. The behavior of objects experiencing simple harmonic motion
 - c. The relationships between the frequency, wavelength, and speed of a wave
 - d. The behavior of waves traveling through various media
 10. Electric Charges and Forces
 - a. The relationship between charge and electrical force
 - b. The behavior of charged objects as a function of an imbalance in charge
 - c. The behavior of objects as a function of electric or magnetic fields
 11. Applications of Electromagnetism
 - a. The relationships between electric current and magnetic field
 - b. Applications of electromagnetism in society

Prerequisites

Science I, Science II, Science III, Algebra II

Guiding Principle(s)

Clear and effective communicator

Self directed and lifelong learner

Creative and practical problem solver

Responsible and involved citizen

Integrative and informed thinker

Assessments

Unit tests

Midterm exam

Final exam

Unit subsection quizzes

Resources

Zitzewitz, P. W. (2005). Glencoe physics: Principles and problems. New York, NY: Glencoe/McGraw-Hill.

PhET Interactive Simulations (2019). Boulder, CO: University of Colorado Boulder.

<https://phet.colorado.edu/>

Other videos, simulations, interactives, and websites as listed on the corresponding assignments.

Academic Physics

Science • 12 • Full Year • 1 Credit

Course Description

This rigorous course addresses the following topics: motion, forces, two-dimensional interactions, gravitation, orbital motion, impulse and momentum, energy and work, conservation of energy, electricity, and magnetism. The course explores the nature of physics conceptually, mathematically, and experimentally. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. There are strong expectations concerning the roles and responsibilities of students in the learning process. Math and writing proficiencies are essential for student success. Students are expected to maintain a science notebook and complete daily assignments.

Units of Study w/ Essential Questions

Scientific Skills and Practices
Constant Velocity Motion
Uniformly Accelerated Motion
Forces in One Dimension
Forces in Two Dimensions
Uniform Circular Motion
Orbital Motion and Universal Gravitation
Impulse and Momentum
Energy and Work
Vibrations and Waves
Electric Charges and Forces
Applications of Electromagnetism

What are the skills and practices essential to scientific exploration and inquiry?
How can one explain the structure, properties, and interactions of matter?
How can one explain and predict interactions between objects and within systems of objects?
How can one predict an object's continued motion, changes in motion, or stability?
What underlying forces explain the variety of interactions observed?
Why are some physical systems more stable than others?
How is energy transferred and conserved?
What is energy?
What is meant by conservation of energy?
How is energy transferred between objects or systems?
How are forces related to energy?
If energy is conserved, why do people say it is produced or used?
How are waves used to transfer energy and information?
What are the characteristic properties and behaviors of waves?
What are the predictable patterns caused by Earth's movement in the solar system?
How do scientists and engineers solve problems?

Course Learning Goals

Students will be able to:

1. Ask questions and define problems
2. Develop and use models

3. Plan and carry out investigations
4. Analyze and interpret data
5. Use mathematics and computational thinking
6. Construct explanations and design solutions
7. Engage in argument from evidence
8. Obtain, evaluate, and communicate information

Students will demonstrate an understanding of:

1. Constant Velocity Motion
 - a. Systems and conventions used to describe and represent constant velocity motion
 - b. The motion of an object in one dimension with constant velocity
2. Uniformly Accelerated Motion
 - a. Systems and conventions used to describe and represent uniformly accelerated motion
 - b. The motion of an object in one dimension with uniform acceleration
 - c. The motion of an object experiencing uniform acceleration due to gravity only
3. Forces in One Dimension
 - a. Systems and conventions used to describe and represent forces acting upon an object
 - b. The behavior of objects of mass that are acted upon by a force or forces in one dimension
4. Forces in Two Dimensions
 - a. Systems and conventions used to describe and represent forces acting upon an object in two dimensions
 - b. The behavior of objects of mass as a function of being acted upon by a force or forces in two dimensions
 - c. The behavior of objects of mass as a function of experiencing frictional forces
5. Uniform Circular Motion
 - a. The variables influencing the motion of objects while moving uniformly in a circle and experiencing a net inward force
 - b. The behavior of objects of mass that are moving uniformly in a circle and experiencing a net inward force
6. Orbital Motion and Universal Gravitation
 - a. The variables influencing the motion of orbiting bodies
 - b. The behavior of orbiting bodies
 - c. The gravitational attraction between two objects as a function of the variables influencing that attraction
7. Impulse and Momentum
 - a. The relationship between impulse and change in momentum
 - b. The behavior within a system of objects experiencing a change in momentum
8. Energy and Work
 - a. Systems and conventions used to describe and represent energy
 - b. The relationship between energy and work
 - c. The behavior of objects as a function of energy being both a conserved and transferable quantity
9. Vibrations and Waves
 - a. The variables influencing an object experiencing simple harmonic motion
 - b. The behavior of objects experiencing simple harmonic motion
 - c. The relationships between the frequency, wavelength, and speed of a wave
 - d. The behavior of waves traveling through various media
10. Electric Charges and Forces
 - a. The relationship between charge and electrical force
 - b. The behavior of charged objects as a function of an imbalance in charge
 - c. The behavior of objects as a function of electric or magnetic fields
11. Applications of Electromagnetism
 - a. The relationships between electric current and magnetic field

b. Applications of electromagnetism in society

Prerequisites

Science I, Science II, Science III, Algebra II

Guiding Principle(s)

Clear and effective communicator
Self directed and lifelong learner
Creative and practical problem solver
Responsible and involved citizen
Integrative and informed thinker

Assessments

Unit tests
Midterm exam
Final exam
Unit subsection quizzes

Resources

Zitzewitz, P. W. (2005). Glencoe physics: Principles and problems. New York, NY: Glencoe/McGraw-Hill.
PhET Interactive Simulations (2019). Boulder, CO: University of Colorado Boulder.
<https://phet.colorado.edu/>
Other videos, simulations, interactives, and websites as listed on the corresponding assignments.

Mt. Ararat High School Course Syllabus

Advanced Physics

Science • 12 • Full Year • 1 Credit

Course Description

This level of physics is more demanding than Academic Physics. Topics include: motion, forces, two-dimensional interactions, gravitation, orbital motion, impulse and momentum, energy and work, conservation of energy, electricity, and magnetism. The course explores the nature of physics conceptually, mathematically, and experimentally. There continues to be an emphasis on the development of scientific skills, practices, and habits of mind. As compared to academic physics, there is an even greater expectation concerning the responsibility of the student in the learning process. The approach of this course allows for a deeper exploration of topics, and requires very strong math skills along with the ability to independently design and conduct experiments. Students must complete the department screening process and the required summer work. Students are expected to maintain a science notebook and complete daily assignments.

Units of Study w/ Essential Questions

Scientific Skills and Practices
Constant Velocity Motion
Uniformly Accelerated Motion
Forces in One Dimension
Forces in Two Dimensions
Uniform Circular Motion

Orbital Motion and Universal Gravitation
Impulse and Momentum
Energy and Work
Vibrations and Waves
Electric Charges and Forces
Applications of Electromagnetism

What are the skills and practices essential to scientific exploration and inquiry?
How can one explain the structure, properties, and interactions of matter?
How can one explain and predict interactions between objects and within systems of objects?
How can one predict an object's continued motion, changes in motion, or stability?
What underlying forces explain the variety of interactions observed?
Why are some physical systems more stable than others?
How is energy transferred and conserved?
What is energy?
What is meant by conservation of energy?
How is energy transferred between objects or systems?
How are forces related to energy?
If energy is conserved, why do people say it is produced or used?
How are waves used to transfer energy and information?
What are the characteristic properties and behaviors of waves?
What are the predictable patterns caused by Earth's movement in the solar system?
How do scientists and engineers solve problems?

Course Learning Goals

Students will be able to:

9. Ask questions and define problems
10. Develop and use models
11. Plan and carry out investigations
12. Analyze and interpret data
13. Use mathematics and computational thinking
14. Construct explanations and design solutions
15. Engage in argument from evidence
16. Obtain, evaluate, and communicate information

Students will demonstrate an understanding of:

12. Constant Velocity Motion
 - a. Systems and conventions used to describe and represent constant velocity motion
 - b. The motion of an object in one dimension with constant velocity
13. Uniformly Accelerated Motion
 - a. Systems and conventions used to describe and represent uniformly accelerated motion
 - b. The motion of an object in one dimension with uniform acceleration
 - c. The motion of an object experiencing uniform acceleration due to gravity only
14. Forces in One Dimension
 - a. Systems and conventions used to describe and represent forces acting upon an object
 - b. The behavior of objects of mass that are acted upon by a force or forces in one dimension
15. Forces in Two Dimensions
 - a. Systems and conventions used to describe and represent forces acting upon an object in two dimensions
 - b. The behavior of objects of mass as a function of being acted upon by a force or forces in two dimensions
 - c. The behavior of objects of mass as a function of experiencing frictional forces

16. Uniform Circular Motion
 - a. The variables influencing the motion of objects while moving uniformly in a circle and experiencing a net inward force
 - b. The behavior of objects of mass that are moving uniformly in a circle and experiencing a net inward force
17. Orbital Motion and Universal Gravitation
 - a. The variables influencing the motion of orbiting bodies
 - b. The behavior of orbiting bodies
 - c. The gravitational attraction between two objects as a function of the variables influencing that attraction
18. Impulse and Momentum
 - a. The relationship between impulse and change in momentum
 - b. The behavior within a system of objects experiencing a change in momentum
19. Energy and Work
 - a. Systems and conventions used to describe and represent energy
 - b. The relationship between energy and work
 - c. The behavior of objects as a function of energy being both a conserved and transferable quantity
20. Vibrations and Waves
 - a. The variables influencing an object experiencing simple harmonic motion
 - b. The behavior of objects experiencing simple harmonic motion
 - c. The relationships between the frequency, wavelength, and speed of a wave
 - d. The behavior of waves traveling through various media
21. Electric Charges and Forces
 - a. The relationship between charge and electrical force
 - b. The behavior of charged objects as a function of an imbalance in charge
 - c. The behavior of objects as a function of electric or magnetic fields
22. Applications of Electromagnetism
 - a. The relationships between electric current and magnetic field
 - b. Applications of electromagnetism in society

Prerequisites

Science I, Science II, Science III, Algebra II

Guiding Principle(s)

Clear and effective communicator
 Self directed and lifelong learner
 Creative and practical problem solver
 Responsible and involved citizen
 Integrative and informed thinker

Assessments

Unit tests
 Midterm exam
 Final exam
 Unit subsection quizzes

Resources

Zitzewitz, P. W. (2005). *Glencoe physics: Principles and problems*. New York, NY: Glencoe/McGraw-Hill.
PhET Interactive Simulations (2019). Boulder, CO: University of Colorado Boulder.
<https://phet.colorado.edu/>
 Other videos, simulations, interactives, and websites as listed on the corresponding assignments.

AP Biology

Science • 12 • Full Year • 1.5 Credit

Course Description

This rigorous introductory college level course is for students who want to pursue a college major in any branch of the sciences. There is an emphasis on the development of scientific skills, practices, and habits of mind. This course requires extensive readings and a demanding laboratory program. Students are expected to take the AP Examination in May. Students who do not take the AP Examination will have their transcripts amended to “Advanced” rather than “Advanced Placement”.

Units of Study w/ Essential Questions

1. Evolution
 - a. What are the processes that drive the diversity of life? What is the evidence that this has happened throughout Earth’s history?
2. Matter
 - a. How do biological systems utilize molecular building blocks to grow, reproduce, and to maintain homeostasis?
 - b. What are some of the complex properties of living things?
3. Energy
 - a. How do biological systems utilize free energy to grow, reproduce, and to maintain homeostasis?
4. Information
 - a. How do living systems store, retrieve, and transmit information essential to life processes?
5. Regulation
 - a. How do living systems respond to information essential to life processes?
6. Ecological Interactions
 - a. How do biological systems interact?

Course Learning Goals

1. Evolution
 - a. The process of evolution drives the diversity and unity of life.
 - b. Change in the genetic makeup of a population over time is evolution.
 - c. Organisms are linked by lines of descent from common ancestry.
 - d. Life continues to evolve within a changing environment.
 - e. Competition and cooperation are important aspects of biological systems.
2. Matter
 - a. The origin of living systems is explained by natural processes.
 - b. Cells communicate by generating, transmitting and receiving chemical signals.
 - c. Interactions within biological systems lead to complex properties.
3. Energy
 - a. Biological systems utilize free energy and molecular building blocks to grow, to reproduce and to maintain dynamic homeostasis.
4. Information
 - a. Living systems store, retrieve, transmit and respond to information essential to life processes.

- b. Growth, reproduction and maintenance of the organization of living systems require free energy and matter.
 - c. Heritable information provides for continuity of life.
 - d. Expression of genetic information involves cellular and molecular mechanisms.
 - e. The processing of genetic information is imperfect and is a source of genetic variation.
 - f. Transmission of information results in changes within and between biological systems.
5. Regulation
- a. Growth, reproduction and dynamic homeostasis require that cells create and maintain internal environments that are different from their external environments.
 - b. Organisms use feedback mechanisms to regulate growth and reproduction, and to maintain dynamic homeostasis.
6. Ecological Interactions
- a. Biological systems interact, and these systems and their interactions possess complex properties.
 - b. Growth and dynamic homeostasis of a biological system are influenced by changes in the system's environment.
 - c. Many biological processes involved in growth, reproduction and dynamic homeostasis include temporal regulation and coordination.
 - d. Naturally occurring diversity among and between components within biological systems affects interactions with the environment.

Prerequisites

Science I-III; department screening including successful completion of summer work

Guiding Principle(s)

1. Clear and effective communicator
 - a. The student can use representations and models to communicate scientific phenomena and solve scientific problems.
2. Self directed and lifelong learner
 - a. The student can engage in scientific questioning to extend thinking or to guide investigations.
 - b. The student can perform data analysis and evaluation of evidence.
3. Creative and practical problem solver
 - a. The student can plan and implement data collection strategies to a particular scientific question.
4. Responsible and involved citizen
 - a. The student is able to connect and relate knowledge across various scales, concepts, and representations in and across Domains.
 - b. The student can work with scientific explanations and theories.
5. Integrative and informed thinker
 - a. The student can use mathematics appropriately.

Assessments

Various Formative Assignments

Unit Summary Exams

Various Reports and Projects

Midterm Exam/Practice Full Length AP Exam

Final Exam/Practice Full Length AP Exam

Resources

Campbell Biology In Focus (Urry) 1e AP® Edition MasteringBiology. Pearson 2014.

HHMI Bio Interactive <https://www.hhmi.org/biointeractive>

National Center for Case Study Teaching in Science <http://sciencecases.lib.buffalo.edu/cs/>

POGIL worksheets

Recommended to use various articles and online resources including:

- Paul Andersen's "Bozeman" Science Videos <https://paul-andersen.squarespace.com/>
- Khan Academy
- Amoeba Sisters Videos
- Crash Course Videos

Mt. Ararat High School Course Syllabus

World Religions

Social Studies • 9 • 1 semester • 0.5 Credit

Course Description

Introduction to World Religions will examine the origins, history, and practices of different religious traditions. Special attention is given to religious founders, scriptures, branches, sacred objects and places, rites of passages, and holidays. Students will understand both differences and similarities among the five major world religions.

Units of Study w/ Essential Questions

Units

- Intro to Religion
- Judaism
- Christianity
- Islam
- Hinduism
- Buddhism

Essential Questions

What is the purpose of religion?

What forces have influenced religious beliefs, traditions, and practices?

How has geography influenced the spread of religion?

Course Learning Goals

1. Understand how the forces of continuity and change influence religion.
2. Understand the significance of turning points in each religion.
3. Trace the development of enduring themes within each religion.
4. Examine the interdependent relationships and challenges among the major religions.

Prerequisites

None

Guiding Principle(s)

- Clear and Effective Communicator
- Self-Directed and Lifelong Learner
- Creative and Practical Problem Solver
- Responsible and Involved Citizen
- Integrative and Informed Thinker

Assessments

Quizzes
Tests
Video Labs
Projects
Presentations

Resources

Online written and video resources (i.e. BBC, Pew, Twinkl, YouTube, Teaching Tolerance)
Holy Books (Torah, Christian Bible, Qur'an, Tripitaka)
World Religions Osborne text
Great Courses - World Religion
Stephen Prothero - *God in Not One: The Eight Rival Religions That Run the World - and Why Their Differences Matter*



Mt. Ararat High School Course Syllabus

World Governments

Social Studies • 9 • 1 semester • 0.5 Credit

Course Description

World Governments will examine the purpose of government and compare the basic philosophies and structures of government in four to five countries, with special emphasis on the United States. We will explore the rights and responsibilities of citizenship and current issues that cause conflict in each of the places we study.

Units of Study w/ Essential Questions

Units

- United States
- United Kingdom
- China
- Iran
- Nigeria (optional)

Essential Questions

- Students will evaluate the purpose of government
- Students will understand different forms of government
- Students will understand the impact citizens have on their governments and value the rights and responsibilities of citizenship

Course Learning Goals

1. Evaluate how and why democratic ideals have changed over time
2. Analyze constitutional principles such as limited government and separation of powers
3. Compare the rights, duties, and responsibilities of US citizens with those of citizens of other nations
4. Evaluate how people influence government

Prerequisites

None

Guiding Principle(s)

- Clear and Effective Communicator
- Self-Directed and Lifelong Learner
- Creative and Practical Problem Solver
- Responsible and Involved Citizen
- Integrative and Informed Thinker

Assessments

Quizzes
Tests
Video Labs
Projects
Presentations

Resources

US Declaration of Independence
US Constitution
Magna Carta
Mayflower Compact
Annenbergclassroom.org
PBS
POV
Upfront
YouTube
Landmarkcases.org
iCivics.org



Mt. Ararat High School Course Syllabus

Comparative Economics

Social Studies • 10 • 1 semester • 0.5 Credit

Course Description

Comparative Economics is a survey course intended to provide students with a basic understanding of the differences between command versus market economics. Students will examine key historical and contemporary economic systems through the lenses of scarcity and fairness. In addition, students will see how economic policies such as personal, fiscal, and monetary impact and economic system.

Units of Study w/ Essential Questions

- Introduction: How do scarcity and economic values influence economic decisions?
- Hands-On Systems: What are the advantages and disadvantages of command economies?
- Hands-Off Systems: What are the advantages and disadvantages of market economics?
- Personal Financial Literacy: How can someone responsibly manage their financial assets?
- Monetary Policy: How can monetary policy create and resolve economic crises?
- Fiscal Policy: How does the concept of fairness influence taxation and spending?
- Stock Markets: How does risk impact economic decisions?

Course Learning Goals

- 1. Economics 4A: Students will be able to explain and apply economic concepts to contemporary, personal and/or historical events.**
 - a. Define fundamental economic concepts such as utility, scarcity, consumer choice model, wants, needs, goods, services, and resources.
 - b. Explain what economic concept is represented when given an example.
 - c. Analyze a given event and explain which economic concepts are present and how they affect the situation.
 - d. Propose changes in the economic concepts of a given situation in order to achieve a desired outcome.
- 2. Economics 4B: Students will be able to compare and contrast the characteristics of different economic systems.**
 - a. List the main categories of economic systems and examples.
 - b. Identify an economic system based on its characteristics.
 - c. Analyze different economic systems to compare and contrast their economic characteristics.
 - d. Evaluate an economic system to determine its inherent strengths and weaknesses.
- 3. Economics 4C: Students will be able to identify examples of monetary policy and explain its role in a modern economy.**
 - a. Define the Federal Reserve and types of economic crises.
 - b. Explain how monetary policy influences a modern economy.
 - c. Determine the general monetary policy cause contributing to an economic crisis.
 - d. Devise a solution to an economic crisis based on sound monetary policy suggestions.
- 4. Economics 4D: Students will be able to determine personal concepts of fairness and apply these concepts to fiscal policy.**
 - a. Define the basic concepts associated with fiscal policy to include different types of taxes, expenditures, income inequality, and fairness.
 - b. Examine a tax in order to determine if it is progressive, regressive, or proportional and decide if it is a fair tax.
 - c. Craft a tax that achieves both a financial goal and is fair.
 - d. Balance taxation and spending in a given situation that meets a personal definition of fairness.
- 5. Economics 4E: Students will be able to make financial decisions in light of varying levels of risk.**
 - a. Identify and provide basic examples of wants, needs and risks.
 - b. Assess the risks of a financial decision and its possible impact.
 - c. Manage financial assets to balance wants and needs with an acceptable level of risk.
 - d. Devise creative solutions to minimize risk for financial assets.

Prerequisites

Social Studies I: Intro to World Religions

Social Studies II: World Governments

Guiding Principle(s)

- Clear and Effective Communicator
- Self-Directed and Lifelong Learner
- Creative and Practical Problem Solver
- Responsible and Involved Citizen
- Integrative and Informed Thinker

Assessments

Command vs. Market Economy Examples

Impact of Industrialism

Budget Simulation

Resources

Online Stock Market Portfolio at www.marketwatch.com

Mt. Ararat High School Course Syllabus

American Foreign Policy

Social Studies • 10 • 1 semester • 0.5 Credit

Course Description

American Foreign Policy examines the basic theories underlying international relations. After learning about the diplomatic history of the United States, students will study themes and topics associated with foreign policy such as international organizations and foreign aid. Ultimately, students will formulate and defend their personal approach to foreign policy.

Units of Study w/ Essential Questions

- Introduction: What are the basic differences between Realism and Liberalism?
- American Diplomacy: How has the United States interacted with the world in the past?
- International Organizations: What values guide participation in various international organizations?
- Foreign Aid: How can different types of foreign aid help other countries?
- Genocide: What role, if any, does the United States have in preventing genocide?

Course Learning Goals

- 1. Social Studies Application 1B: Students can evaluate multiple sources for meaning and relevance.**
 - a. Define the difference between fact and opinion.
 - b. Distinguish between fact and opinion from sample sources.
 - c. Determine the central meaning of a source and explain its relevance to a topic.
 - d. Evaluate the effectiveness or purpose of a source in connection to a topic.
- 2. Social Studies Application 1E: Students will be able to present and defend an argument both orally and written.**
 - a. State an opinion on a thesis.
 - b. Identify specific examples and evidence to support a thesis.
 - c. Explain how specific examples and evidence support a thesis.
 - d. Extend an argument by connecting the thesis to a different concept, theme, approach, or discipline.
- 3. Civics Engagement 2A: Students will be able to produce an informed policy statement on a contemporary issue using appropriate social studies skills and knowledge.**
 - a. Describe a contemporary issue.
 - b. Analyze the main factors (cause/effect) contributing to a contemporary issue.
 - c. Formulate an independent and informed policy for a contemporary issue.
 - d. Challenge and refute a competing policy for a contemporary issue.
- 4. History 6D: Students will be able to identify bias in sources.**
 - a. Define bias.
 - b. Identify examples of bias in various sources.

- c. Interpret a source for the cause of its bias.
- d. Evaluate how bias affects the perspective of a source.

Prerequisites

Social Studies I: Intro to World Religions
Social Studies II: World Governments

Guiding Principle(s)

- Clear and Effective Communicator
- Self-Directed and Lifelong Learner
- Creative and Practical Problem Solver
- Responsible and Involved Citizen
- Integrative and Informed Thinker

Assessments

Refugee Camp Scenario
Statecraft Simulation

Resources

Mt. Ararat High School Course Syllabus

AP European History

Social Studies • 10 • Full Year • 1 Credit

Course Description

This course, for the student who wants to prepare for the Advanced Placement European History examination, deepens the student's knowledge of European history. The course offers an in-depth look at selected areas of the history of Europe and related topics. College level materials are used in class. Strong emphasis is placed upon analytical writing, examination of historical schools of thought, and the ability to express points of view in both written and verbal modes.

Units of Study w/ Essential Questions

- Renaissance: To what extent did the Renaissance differ from the Medieval Period?
- Reformation: What were the major causes and effects of the Protestant Reformation?
- Age of Exploration: How did Europe's relationship with the world change 1492-1800?
- Age of Kings: How did states and other institutions of power change in the period 1648-1789?
- Scientific Revolution: What were the major technological and scientific innovations of this time period, and to what extent did they change the worldview of Europeans?
- Age of Reason: How did ideas about the individual's relationship with society and institutions of power change in this time?
- French Revolution: What caused the French Revolution and what lasting changes resulted from the French Revolution?
- Industrial Revolution: How did the Industrial Revolution change the social and economic structure of Europe, including work life, family and women's lives, and the demographics of Europe?
- Nationalism and Conflict in the 19th Century: How did new ideas about nationalism alter the map of Europe and create new identities in Europe?
- Nineteenth Century Mass Politics and Consumer Society: How did new technologies alter European

political and social life in the nineteenth century?

- New Imperialism: What were the ideological, political, and economic motivations for and results of New Imperialism?
- World War One: How did World War One represent a turning point in European politics and society?
- Europe Between the Wars: What forces led to the rise of totalitarian regimes in the 1920s and 1930s?
- World War Two: How was national identity used by European states during World War Two to justify total war?
- Post War Europe: How and to what extent was Europe able to recover from the disaster of World War Two?
- The Cold War: How did the Cold War affect the political, social, and technological development of Europe 1945-1990?
- Contemporary Europe: To what extent do the challenges of 21st century Europe represent a new relationship between Europe and the World?

Course Learning Goals

1. Gather, synthesize, and evaluate information from multiple sources representing a wide range of views; make judgements about conflicting finds from different sources, incorporating those from sources that are valid and refuting others.
2. Construct and present arguments orally and/or in writing in which claims, counterclaims, reasons, and evidence demonstrate their relevance to each other and the overall argument and the piece is organized anticipating the audience's knowledge level, concerns, values, and possible biases.
3. Evaluate how the forces of cooperation and conflict among people, as well as the movement and interactions of various groups of people, including Native Americans, influence the division and control of the Earth's surface historically and in the present.
4. Identify and critique diverse perspectives on societal issues, trends, and events and articulate priorities different groups or people hold in their perspectives.
5. Explain and apply the concepts of specialization, economic interdependence, comparative advantage, and supply and demand as they relate to economic conditions or issues.
6. Compare different economic systems in a variety of regions and groups including Maine, Native Americans, the United States, and various regions of the world; explain the relationship between the region's economic system and its government, and the resulting costs and benefits.

Prerequisites

Social Studies I; department screening including completed summer work

Guiding Principle(s)

- Clear and Effective Communicator
- Self-Directed and Lifelong Learner
- Creative and Practical Problem Solver
- Responsible and Involved Citizen
- Integrative and Informed Thinker

Assessments

- Stimulus-based multiple choice questions
- Short answer questions (SAQ)
- Long essay questions (LEQ)
- Document-based questions (DBQ)

Resources

Jackson Spielvogel, *Western Civilization*

YouTube (e.g. Crash Course World History, Tom Richey)

APCentral teacher resources (released AP exams and sample student responses)

US History I: 1775-1914

Social Studies • 11 • 1 semester • 0.5 Credit

Course Description

In this course, students study major events, themes, and patterns in United States history from the colonial period up to 1914. Students will develop key skills such as understanding historical cause and effect, analyzing sources, making historical interpretations of events, and making oral and written arguments to defend their history-based opinions.

Units of Study w/ Essential Questions

Exploration

1. Colonial America
 - a. Was colonial America a democratic society?
 - b. Was slavery the basis of freedom in colonial America?
2. American Revolution and Constitution
 - a. Were the colonists justified in resisting British policies after the French and Indian War?
 - b. Did the Declaration of Independence establish the foundation of American government?
 - c. Do separation of powers and checks and balances make our government work too slowly?
3. American Expansion
 - a. Should the United States have allowed American Indians to retain their tribal identities?
 - b. Does the United States have a mission to expand freedom and democracy?
4. Slavery and The Civil War
 - a. Were the abolitionists responsible reformers or irresponsible agitators?
 - b. Was slavery the primary cause of the Civil War?
 - c. Was the Civil War worth its costs?
5. Reconstruction and Jim Crow
 - a. Does racial equality depend upon government action?
 - b. Should African Americans have more strongly resisted the government's decision to abandon the drive for equality? (Booker T. Washington's "accommodation" vs. W.E.B. Du Bois's "agitation" approaches)
6. Industrial Revolution and Immigration
 - a. Has rapid industrial development been a blessing or a curse for Americans?
 - b. Should business be regulated closely by the government?
 - c. Has immigration been the key to America's success?

Course Learning Goals

1. Develop compelling inquiry questions and conduct research on current social studies issues by applying appropriate methods and ethical reasoning skills, and using relevant tools, technologies, and sources from social studies fields to conduct the inquiry.
2. Develop informative/explanatory texts about social studies topics, including the narration of historical events, and present a coherent set of finding orally and/or in writing.
3. Evaluate various explanations and authors' differing point of view on the same event or issue, citing specific textual evidence from primary and secondary sources to support analysis.

Prerequisites

Social Studies I (World Religions/World Governments); Social Studies II (Economics/American Foreign Policy)

Guiding Principle(s)

- Clear and Effective Communicator
- Responsible and Involved Citizen
- Integrative and Informed Thinker

Assessments

Quizzes, Tests

Resources

Nystrom Atlas of United States History
PBS Videos
Lcivics.org



Mt. Ararat High School Course Syllabus

US History II: 1914- Present

Social Studies • 11 • 1 semester • 0.5 Credit

Course Description

In this course, students study major events, themes, and patterns in United States history from the beginning of World War One to the present day. Students will develop key skills such as understanding historical cause and effect, analyzing sources, making historical interpretations of events, and making oral and written arguments to defend their history-based opinions.

Units of Study w/ Essential Questions

1. Imperialism and World War One
 - a. Should the United States have acquired possessions overseas?
 - b. Should the United States have entered World War I?
2. Roaring Twenties and Great Depression (Boom and Bust)
 - a. Was the decade of the 1920s a decade of innovation or conservatism?
 - b. Was the New Deal an effective response to the depression?
3. World War II and the Impact on America and the World
 - a. Does American security depend upon the survival of its allies?
 - b. How important was the home front in the United States' victory in World War II?
4. Fighting Oppression at Home and Abroad
 - a. Is violence or non-violence the most effective means to achieve social change?
 - b. Do the ideas of the 1960s still have relevance today?

Course Learning Goals

1. Develop compelling inquiry questions and conduct research on current social studies issues by applying appropriate methods and ethical reasoning skills, and using relevant tools, technologies, and sources from social studies fields to conduct the inquiry.
2. Develop informative/explanatory texts about social studies topics, including the narration of

- historical events, and present a coherent set of findings orally and/or in writing.
3. Evaluate various explanations and authors' differing point of view on the same event or issue, citing specific textual evidence from primary and secondary sources to support analysis.
 4. Using examples of historical or current issues, analyze the political structures, power, and perspectives of diverse cultures, including Native Americans, various historical and recent immigrant groups in the United States, and various cultures in the world.

Prerequisites

Social Studies I (World Religions/World Governments); Social Studies II (Economics/American Foreign Policy); Social Studies III Part I (US History I)

Guiding Principle(s)

- Clear and Effective Communicator
- Responsible and Involved Citizen
- Integrative and Informed Thinker

Assessments

Quizzes, Tests

Resources

Nystrom Atlas of United States History
PBS Videos
Lcivics.org



Mt. Ararat High School Course Syllabus

AP US History

Social Studies • 11 • Full Year • 1 Credit

Course Description

This course, designed for the student who wishes to prepare for the Advanced Placement US History examination, provides an in-depth examination of US History. College level materials are utilized and a heavy emphasis is placed upon analytical writing, examination of historical schools of thought and the ability to express points of view in a seminar format. There is required summer work for this course.

Units of Study w/ Essential Questions

1. Period 1: 1491-1607 Does a close relationship between church and state lead to a more moral society?
2. Period 2: 1607-1754 Was the American War for Independence inevitable?
3. Period 3: 1754-1800 Was the American Revolution a "radical" revolution?
4. Period 4: 1800-1848 Whose ideas were best for the new nation, Hamilton's or Jefferson's?
5. Period 5: 1844-1877 Was slavery the primary cause of the Civil War?
6. Period 6: 1865-1898 Did America fulfill the dreams of immigrants?
7. Period 7: 1890-1945: Should the United States fight wars to make the world safe for democracy? Or: Should the United States have entered World War I?
8. Period 8: 1945-1980 Was the Cold War inevitable?
9. Period 9: 1980-Present Are peace and stability in the Middle East vital to the United States' economy and national security?

Course Learning Goals

1. Apply an understanding of the forces of continuity and change to analyze the evolution of historical eras, the persistence of enduring themes.
2. Select and organize evidence from primary and secondary sources to support an historical interpretation or argument.
3. Trace and evaluate the development of democratic ideals, the persistence of enduring themes (e.g. power and authority; migration) and their impact on societal issues, trends and events.
4. Identify and critique diverse perspectives on societal issues, trends and events and articulate priorities different groups or people hold in their perspectives.
5. Apply an understanding of causality, connections, and significance to develop credible explanations of historical events based on reasoned interpretation of evidence.

Prerequisites

Social Studies I and Social Studies II; department screening including completed summer work

Guiding Principle(s)

- Clear and Effective Communicator
- Responsible and Involved Citizen
- Integrative and Informed Thinker

Assessments

Stimulus-based multiple choice questions

Short answer essay

Long answer essay

Document-based questions

Resources

The American Pageant, various other assigned reading texts; AP Central teacher resources, Gilder Lerhman website



Mt. Ararat High School Course Syllabus

Psychology

Social Studies • 11-12 • 1 semester • 0.5 Credit

Course Description

This course gives the student a basic understanding of individual human behavior. The course covers topics such as motivation, perception, communication, learning, thinking, personality, and abnormal behavior. Students develop and an understanding of these topics through experiments and consideration of human experience.

Units of Study w/ Essential Questions

- Learning: What are the different ways people learn to process information?
- Thinking and Intelligence: How do humans think and how is intelligence measured?
- Memory: How are memories formed, stored, and retrieved?
- Lifespan Development: What are the various psychological issues that humans face throughout a lifetime?

- Emotion and Motivation: How do we handle our emotions and motivate ourselves and others?
- Personality: What are explanations for personality differences?
- Social Psychology: How is individual behavior affected by group behavior?
- Stress, Lifestyle, and Health: Where does stress come from and how can it be managed?
- Psychological Disorders and Treatment: What are the primary psychological disorders and how can they be treated?

Course Learning Goals

- Describe major concepts related to the study of learning, cognition, and memory.
- Describe major concepts related to the study of sensation and perception, and motivation and emotion.
- Describe the factors that create distinct personality traits in humans and account for differences in intelligence.
- Describe and analyze the psychological challenges and issues faced during different developmental stages.
- Describe the major concepts related to the study of stress and health, abnormal behavior, and therapy.
- Analyze the major concepts in the field of social psychology and how groups influence individual behavior.

Prerequisites

Social Studies I and II

Guiding Principle(s)

- A creative and practical problem solver
- An integrative and informed thinker

Assessments

Quizzes, tests, projects

Resources

Text: *Psychology, OpenStax*

Online articles, YouTube Crash Course videos

Mt. Ararat High School Course Syllabus

Sociology

Social Studies • 11-12 • 1 semester • 0.5 Credit

Course Description

The study of sociology involves learning about relationships within groups and in social situations. The course provides students with a basic and practical knowledge of the working relationships within cultures, families, groups, institutions, and belief systems. Principles are applied to social problems and issues, addressing topics such as the family, religion, poverty, population, values, and education.

Units of Study w/ Essential Questions

- Culture: What is culture, what are cultural norms, and what accounts for cultural differences?

- Society and Societal Interaction: How are societies organized?
- Socialization: How do individuals and groups learn the norms of society?
- Groups and Organization: What are the characteristics of groups and how are they organized?
- Deviance, Crime, and Social Control: Why and how do many deviate from social norms?
- Media and Technology: How do media and technology shape our society?
- Global Inequality: What are the impacts of wealth inequality around the world?
- Race and Ethnicity: In what ways are issues surrounding race and inequality present today?
- Gender, Sex, and Sexuality: How are norms changing for gender identity and other gender issues?
- Social Movements and Change: How do movements lead to change and what are the important movements today?

Course Learning Goals

- Describe the components of culture.
- Analyze how culture influences individuals, including themselves.
- Evaluate important social institutions and how they respond to social needs.
- Assess how social institutions and cultures change and evolve.
- Describe the process of socialization across the life course.
- Analyze the effects of social inequality on groups and individuals.
- Explain the relationship between social institutions and inequality.

Prerequisites

Social Studies I and II

Guiding Principle(s)

- A creative and practical problem solver
- An integrative and informed thinker

Assessments

Quizzes, Tests, Projects

Resources

OpenStax, Sociology

Videos

Mt. Ararat High School Course Syllabus

AP US Government & Politics

Social Studies • 12 • Full Year • 1 Credit

Course Description

AP US Government and Politics provides a college-level, nonpartisan introduction to key political concepts, ideas, institutions, policies, interactions, roles, and behaviors that characterize the constitutional system and political culture of the United States. Students study US foundational documents, Supreme Court decisions, and other texts and visuals to gain an understanding of the relationships and interactions among political institutions, processes, and behavior. They also engage in disciplinary practices that require them to read and interpret data, make comparisons and applications, and develop evidence-based arguments.

Units of Study w/ Essential Questions

- Foundations of American Democracy: How did the foundational documents establish the system of government we know today?
- Interaction of Branches of Government: How do the 3 branches of government share power and check the power of each other?
- Civil Liberties and Civil Rights: How are civil liberties and civil rights protected and what, if any, are the limits of each?
- American Political Ideology and Beliefs: How do Americans develop their political beliefs and what is the diversity of opinion on political beliefs and behaviors in the United States?
- Political Participation: In what ways do Americans participate in the political process and how has this changed over time?

Course Learning Goals

- Evaluate how people influence government and work for the common good.
- Evaluate current issues by applying the democratic ideals in the founding documents and constitutional principles of the United States government, and explain how and why democratic institutions and interpretations of democratic ideals have changed over time.
- Compare and evaluate various forms of government and political systems in the United States and the world, and describe their impact on societal issues, trends, and events.
- Analyze constitutional principles, and the roles of the citizen and the government, in major laws or cases, and compare the rights, duties, and responsibilities of the United States citizens with those of citizens from other nations.

Prerequisites

Social Studies I, II, and III; department screening including completed summer work

Guiding Principle(s)

- A responsible and involved citizen
- A clear and effective communicator

Assessments

Quizzes

Tests

Stimulus-based multiple choice questions

Free response essays

Resources

Text - *US Government*, OpenStax

Apgopro.com

YouTube Crash Course US Government

Online articles, New York Times, Washington Post, National Review

Fox News, NBC News



Arts

Fine Arts • 9 • 1 semester • 0.5 Credit

Course Description

This course is available to students who wish to partially fulfill the fine arts requirement, as well as students who are considering taking other art courses later during high school. Students develop a visual and aesthetic “foundation” on which to build by increasing their exposure to the visual world, enlarging their visual vocabulary and experience, improving their skills in visual expression, and making them more aware of their visual surroundings. Students will use design elements and principles in a variety of media such as paint, printmaking, drawing, and 3-dimensional forms.

Units of Study w/ Essential Questions

1. Elements of Art - How are students able to express and explain the different characteristics of various attributes of art?
2. Theory of Art - How will students reflect on their explanations and expressions of their artwork as well as the artwork of others?
3. Drawing - How can students explore combinations of line and mark-making?
4. Painting - How can students recognize the expressive nature of a medium, a color and space?
5. Sculpture - How can a student plan, prepare, and actualize a form using multiple media in space and time?
6. Printmaking - Can students identify ways to make multiples of a work of art using mirror image thinking?
7. Bookbinding - How can students craft a functional object?
8. Graphic Design - How can students draw upon their interpretation of their world to visually, spatially, and graphically communicate a message?

Course Learning Goals

1. Students will evaluate the elements and principles of design within a piece of art while making comparisons with other pieces of art and their techniques.
2. Students will compare the effects of different media, tools, techniques, and processes to create a variety of original artwork.
3. Students will apply and analyze creative problem-solving skills to help improve their work and the work of others.
4. Students will identify the difference between a personal opinion and an informed judgment when analyzing a work of art.
5. Students will analyze visual arts skills and concepts that are similar across the various disciplines. They will be able to explain how knowledge of the arts relates to learning in careers, life skills, and recreational activities.

Prerequisites

None

Guiding Principle(s)

- A clear & effective communicator
- A self-directed & lifelong learner
- A responsible & involved citizen
- A creative & practical problem solver
- An integrative & informed thinker

Assessments

- Assessment for each learning goal
- Unit assessments
- Critiques
- Summative assessment

Resources

MAEA

Stokstad History of Art

Khan Academy

Heilbrunn Timeline

Smarthistory

YouTube

Tomes and Tomes of books like Studio Habits of the Mind

Mt. Ararat High School Course Syllabus

Ceramics I

Fine Arts • 9-12 • 1 semester • 0.5 Credit

Course Description

This course is available to students who have taken Foundations in Visual Arts or upon teacher approval. Students explore in-depth the cultural and historical aspects of ceramics and a variety of techniques to make three-dimensional works. Students will use design elements and principles in a variety of projects both sculptural and functional.

Units of Study w/ Essential Questions

1. Pinched Vessels - How do you make appropriately weighted work?
2. Coiled Vessels - How do you use line in 3-D?
3. Slab Boxes & Slab Mugs with Handles - How do you manipulate clay in different stages of wetness/dryness?
4. Raku Dancing Figure - How do you capture movement/energy in a sculptural artwork? (Understanding ancient firing techniques)
5. Artist Choice Sculptural Work - How do you search for and research an artist? What inspires you and why?

Course Learning Goals

1. Students will evaluate the three-dimensional elements and principles of design within a piece of art while making comparisons with other pieces of art and their techniques.
2. Students will compare the effects of different tools, techniques, and processes to create a variety of original three-dimensional artwork.
3. Students will apply and analyze creative problem-solving skills to help improve their work and the work of others.
4. Students will identify the difference between personal opinion and an informed judgment when analyzing a work of art.
5. Students will analyze visual arts skills and concepts that are similar across the various disciplines. They will be able to explain how knowledge of the arts relates to learning in careers, life skills, and recreational activities.

Prerequisites

Foundations in Visual Arts; teacher approval

Guiding Principle(s)

- A clear & effective communicator
- A self-directed & lifelong learner
- A responsible & involved citizen
- A creative & practical problem solver
- An integrative & informed thinker

Assessments

- Assessment for each learning goal
- Unit assessments
- Critiques
- Summative assessment

Resources

MAEA

Ceramics Monthly/Potter Making Illustrated

YouTube

Mt. Ararat High School Course Syllabus

Drawing

Fine Arts • 9-12 • 1 semester • 0.5 Credit

Course Description

Drawing is an art form and means of personal expression. Its practice increases visual literacy: understanding what and how we see. Design elements of drawing are studied including the study of visual communication. Visual observation, basic media skills, and creative uses of drawing media are stressed. Various drawing media such as pencil, ink, charcoal, and mixed media are explored as drawing tools.

Units of Study w/ Essential Questions

1. Mark Making - The Language of Line and Composition
 - a. How can you create a visually dynamic composition evoking a mood using line and mark-making?
2. Animals - Anthropomorphism, Texture and Color Blending - Conceptual Art
 - a. How can observational drawing develop into an imaginative drawing?
 - b. How can the complex movement of an animal be suggested or captured through color blending, line, texture, and perspective?
3. Still Life Object Study - Pop Art
 - a. Why is it important to use light, medium, and dark values in an observational drawing?
 - b. What effective methods can you use with colors that are different than when you are working with black and white mediums?
 - c. How does the use of shapes versus lines enhance the drawing practice?
4. An Illustrated Life Research Project - Discover an illustrator through student-based projects - Art Historical Research
 - a. How do the experiences and interests of artists shape what they create?

- b. What are the universal themes in the artwork?
- c. Can you defend your discoveries about a piece of art through research about the subject, style, and theme of an artist's work?

Course Learning Goals

1. Students will understand the technical processes of working in a variety of art media, exploring various drawing media such as pencil, ink, charcoal, and mixed media.
2. Students will understand ways artists from various cultures and historical periods have used these materials and tools as an expressive medium, understanding the design elements as they relate to drawing.
3. Students will be able to research artwork from various artists and understand how these works reflect the culture and time in which they were created.
4. Students will strengthen visual observation, with basic skills and creative uses of drawing, applying this understanding to create original works from various subjects or themes as solutions to technical or visual problems, or as visual communication to express an idea.

Prerequisites

Foundations in Visual Arts; approval by department chair

Guiding Principle(s)

- A clear & effective communicator
- A self-directed & lifelong learner
- A responsible & involved citizen
- A creative & practical problem solver
- An integrative & informed thinker

Assessments

- Quizzes
- Critiques
- Self Evaluations
- Portfolio

Resources

Hetland, Lois. *Studio thinking: the real benefits of visual arts education*. New York: Teachers College Press, 2007. Print.

Mt. Ararat High School Course Syllabus

Painting

Fine Arts • 9-12 • 1 semester • 0.5 Credit

Course Description

In this course, students experience working with various painting media and techniques. Students come to understand the expressive qualities of acrylic, watercolor, and tempera through their work. In addition, the historical significance of artists as reflectors of their time is studied providing a context for an understanding of visual art. In applications including preliminary drawing assignments, written responses, and studio work, students will demonstrate an understanding of the visual language of painting.

Units of Study w/ Essential Questions

How do artists develop a visual language, through the types of brushstrokes they make, compositional and

framing choices, and the life experiences they reference to tell a story, making meaning through images?

Course Learning Goals

1. Students will understand the technical process of working in a variety of painting media, exploring various drawing media such as tempera, watercolor, and acrylic.
2. Students will understand ways painters from historical periods have used these materials and tools as an expressive medium, understanding the design elements as they relate to painting.
3. Students will be able to research artwork from various artists and understand how these works reflect the culture and time in which they were created.
4. Students will strengthen visual observation, with basic skills and creative uses of paint, applying this understanding to create original works from various subjects or themes as solutions to technical or visual problems, or as visual communication to express an idea.

Prerequisites

Foundations in Visual Arts

Guiding Principle(s)

- A clear & effective communicator
- A self-directed & lifelong learner
- A responsible & involved citizen
- A creative & practical problem solver
- An integrative & informed thinker

Assessments

- Quizzes
- Critiques
- Self Evaluations
- Portfolio

Resources