Global Impact STEM Academy Course Offerings & Descriptions

English Language Arts

Advanced English I (050160):

Integrated Language Arts Instruction addresses the content and skills of Ohio's Academic Content Standards for English Language Arts. Instruction should be based on the benchmarks for grades 8-10 and grade level indicators for grade *nine*. Students will read a variety of texts for different purposes, utilize the writing process, write for different purposes and different audiences, research self-selected or assigned topics, use an appropriate form to communicate their findings and continue to use effective communication techniques.

* Completed first time in one semester.

English I (050160):

Integrated Language Arts Instruction addresses the content and skills of Ohio's Academic Content Standards for English Language Arts. Instruction should be based on the benchmarks for grades 8-10 and grade level indicators for grade *nine*. Students will read a variety of texts for different purposes, utilize the writing process, write for different purposes and different audiences, research self-selected or assigned topics, use an appropriate form to communicate their findings and continue to use effective communication techniques.

Advanced English II (050170):

Integrated Language Arts Instruction addresses the content and skills of Ohio's Academic Content Standards for English Language Arts. Instruction should be based on the benchmarks for grades 8-10 and grade level indicators for grade *ten*. Students will read a variety of texts for different purposes, utilize the writing process, write for different purposes and different audiences, research self-selected or assigned topics, use an appropriate form to communicate their findings and continue to use effective communication techniques.

* Completed first time in one semester.

English II (050170):

Integrated Language Arts Instruction addresses the content and skills of Ohio's Academic Content Standards for English Language Arts. Instruction should be based on the benchmarks for grades 8-10 and grade level indicators for grade *ten*. Students will read a variety of texts for different purposes, utilize the writing process, write for different purposes and different audiences, research self-selected or assigned topics, use an

appropriate form to communicate their findings and continue to use effective communication techniques.

English III (050180):
Integrated Language Arts Instruction addresses the content and skills of Ohio's Academic Content Standards for English Language Arts. Instruction should be based on the benchmarks for grades 11-12 and grade level indicators for grade *eleven*. Students will read a variety of texts for different purposes, utilize the writing process, write for different purposes and different audiences, research self-selected or assigned topics, use an appropriate form to communicate their findings and continue to use effective communication techniques.

English IV (050190):
Integrated Language Arts Instruction addresses the content and skills of Ohio's Academic Content Standards for English Language Arts. Instruction should be based on the benchmarks for grades 11-12 and grade level indicators for grade *twelve*. Students will read a variety of texts for different purposes, utilize the writing process, write for different purposes and different audiences, research self-selected or assigned topics, use an appropriate form to communicate their findings and continue to use effective communication techniques.

English 1111:
Writing and revising process, academic and argumentative essays; literary examples of descriptive, narrative, expository, and persuasive modes; language issues and library skills. Writing intensive. Primary focus on formal, written work, composed for a variety of audiences.

English 1112:
Critical thinking. Critical thinking, persuasive writing, research skills, and literary analysis. Writing intensive. Writing a variety of texts, including the researched essay. Opportunities for revision. Minimum of 5000 total words (20 pages). Electronic or other projects of academic rigor and substance considered. Primary focus on formal, written work.

<u>Foreign Language</u>
Spanish 1111:
Integration of Interpersonal, Interpretive, and Presentational Modes of Communication. Practice real-world communicative tasks in culturally appropriate ways. Identify products, practices, and perspectives of the target culture(s). Use grammar, vocabulary,

and structures to meet functional performance goals to build a foundation for continued language learning. Perform in the Novice range on the American Council of Teachers of Foreign Languages (ACTFL) Performance Scale. College-level textbook required.

Spanish 1112:
Integration of Interpersonal, Interpretive, and Presentational Modes of Communication. Practice real-world communicative tasks in culturally appropriate ways. Identify products, practices, and perspectives of the target culture(s). Use grammar, vocabulary, and structures to meet functional performance goals to build a foundation for continued language learning. Perform better and stronger in the Novice range on the American Council of Teachers of Foreign Languages (ACTFL) Performance Scale. Some abilities developing in the Intermediate range. College-level textbook required.

Spanish 2111:
Integration of learning outcomes across Interpersonal, Interpretive, and Presentational Modes of Communication. Accomplish real-world communicative tasks in culturally appropriate ways and gain familiarity with products, practices, and perspectives of the target culture(s). Use grammar, vocabulary, and structures for meeting functional performance goals at this level and to build a foundation for continued language learning. Consistently perform in the Novice range. More abilities emerge and develop in the Intermediate range. College-level textbook required.

Spanish 2112:
Integration of learning outcomes across Interpersonal, Interpretive, and Presentational Modes of Communication. Accomplish real-world communicative tasks in culturally appropriate ways and gain familiarity with products, practices, and perspectives of the target culture(s). Use grammar, vocabulary, and structures for meeting functional performance goals at this level and to build a foundation for continued language learning. Perform better and stronger in the Intermediate range. A few abilities emerge in the Advanced range. College-level textbook required.

American Sign Language 1111:
Integration of Interpersonal, Interpretive, and Presentational Modes of Communication. Accomplish real-world communicative tasks in culturally appropriate ways while gaining familiarity with products, practices, and perspectives of American Deaf Culture. Use of grammar, vocabulary, structures, and spatial orientation to enable functional performance goals and to build a foundation for continued language learning. Generally perform in the Novice range on the American Council of Teachers of Foreign Languages (ACTFL) Performance Scale. College-level textbook/materials required.

American Sign Language 1112:
Integration of Interpersonal, Interpretive, and Presentational Modes of Communication. Accomplish real-world communicative tasks in culturally appropriate ways while gaining familiarity with products, practices, and perspectives of American Deaf Culture. Use of grammar, vocabulary, structures, and spatial orientation to meet functional performance goals and build a foundation for continued language learning. Perform better and stronger in the Novice range on the American Council of Teachers of Foreign Languages (ACTFL) Performance Scale. Some abilities emerge in the Intermediate range. College-level textbook/materials required.

American Sign Language 2111:
Integration of learning outcomes across Interpersonal, Interpretive, and Presentational Modes of Communication. Accomplish real-world communicative tasks in culturally appropriate ways to gain familiarity with products, practices, and perspectives of American Deaf culture. Use of grammar, vocabulary, structures, and spatial orientation to meet functional performance goals and build a foundation for continued language learning. Consistently perform in the novice range while more abilities emerge and develop in the intermediate range. College-level textbook and materials required.

American Sign Language 2112:
Integration of learning outcomes across Interpersonal, Interpretive, and Presentational Modes of Communication. Accomplish real-world communicative tasks in culturally appropriate ways to gain familiarity with products, practices, and perspectives of American Deaf culture. Use of grammar, vocabulary, structures, and spatial orientation to meet functional performance goals and build a foundation for continued language learning. Develop abilities in the intermediate range while abilities emerge in the advanced range. College-level textbook and materials required.

Health & Physical Education

Health (260101):
Educational activities that promote understanding, attitudes, and practices consistent with individual, family, and community health needs.

Physical Education I (080300):
A comprehensive subject area, which incorporates fundamental motor skills, body control and balance, physical fitness, leisure sports and games skills, cognitive skills, as well as stress management skills. * Physical Education can be waived because of participation in high school athletic teams, fitness activities, and other documents activities per Ohio revised code.

Physical Education II (080300):
A comprehensive subject area, which incorporates fundamental motor skills, body control and balance, physical fitness, leisure sports and games skills, cognitive skills, as well as stress management skills. * Physical Education can be waived because of participation in high school athletic teams, fitness activities, and other documents activities per Ohio revised code. Second half of the required course.

Other Physical Education (080999):
Other Physical Education courses for which high school credit can be earned that are different in scope and content from any of the other courses described above.

Mathematics

Transitions to High School Math (110190):
(high school credit optional in grades 9-12, not for high school credit below grade 9) Course designed specifically as intervention for students who enter grade 9 not ready for high school level mathematics courses. Use this code for courses that contain little or no new high school level content, such as pre-algebra, general mathematics, business mathematics and consumer mathematics courses based on the benchmarks and indicators found in the grades 6-8 portion of the Ohio Academic Content Standards.

Advanced Algebra I (110301):
In-depth study of algebraic concepts and processes to represent and solve problems that involve variable quantities. Includes using and relating graphical and symbolic representations and techniques.
*Completed first time in one semester.

Algebra I (110301):
In-depth study of algebraic concepts and processes to represent and solve problems that involve variable quantities. Includes using and relating graphical and symbolic representations and techniques.

Advanced Geometry (111200):
In-depth study of two and three-dimensional geometry including representing problem situations using geometric models, deductive reasoning, and geometry from an algebraic perspective.
*Completed first time in one semester.

Geometry (111200):
In-depth study of two and three-dimensional geometry including representing problem situations using geometric models, deductive reasoning, and geometry from an algebraic perspective.

Advanced Algebra II (110302):
Further study of algebraic concepts and processes such as matrices, vectors, and logarithmic and trigonometric functions.
*Completed first time in one semester.

Algebra II (110302):
Further study of algebraic concepts and processes such as matrices, vectors, and logarithmic and trigonometric functions.

Advanced Pre-Calculus (110099):
The study of advanced topics in functions, algebra, geometry, and data analysis including the conceptual underpinnings of calculus.
*Completed first time in one semester.

Pre-Calculus (110099):
The study of advanced topics in functions, algebra, geometry, and data analysis including the conceptual underpinnings of calculus.

Advanced Calculus (110600):
A formal study of topics from calculus that is not associated with the Advanced Placement Program. Includes the study of limit, series, and differentiation and integration. *Completed first time in one semester.

Calculus (110600):
A formal study of topics from calculus that is not associated with the Advanced Placement Program. Includes the study of limit, series, and differentiation and integration.

Advanced Statistics (119550):
The purpose of this course is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes: Exploring Data, Sampling and Experimentation, Anticipating Patterns, and Statistical Inference. *Completed first time in one semester.

Statistics (119550):
The purpose of this course is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes: Exploring Data, Sampling and Experimentation, Anticipating Patterns, and Statistical Inference.

STEM Math I (110010):
The first course in a four-year sequence that addresses the high school portion of the New Learning Standards for Mathematics. Description of the content appropriate for this course is identified in the Integrated Pathway of Appendix A and/or the Model Content Framework.

STEM Math II (110020):
The second course in a four-year sequence that addresses the high school portion of the New Learning Standards for Mathematics. Description of the content appropriate for this course is identified in the Integrated Pathway of Appendix A and/or the Model Content Framework.

STEM Math III (110030):
The third course in a four-year sequence that addresses the high school portion of the Common Core State Standards for Mathematics. Description of the content appropriate for this course is identified in the Integrated Pathway of Appendix A and/or the Model Content Framework.

STEM Math IV (110040):
The fourth course in a high school sequence that addresses advanced content in Number and Quantity, Algebra, Functions, Geometry, and Statistics and Probability, and/or the conceptual underpinnings of calculus.

Math 1280 CCP:
Algebraic expressions, coordinates and graphs, transformation and composition of functions, inverse functions, polynomial and rational functions, complex numbers synthetic and long division, remainder and factor theorem, exponential and logarithmic functions, systems of equations.

Prerequisite(s): CPE0100 and CPE0700 with a grade of a C or better.

An appropriate college placement test, ACT, or SAT score will satisfy the respective CPE requirement.

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Math 1340 CCP:
Transformation and composition of functions, inverse functions, polynomial and rational functions, synthetic and long division, remainder and factor trigonometric functions, solving triangles, laws of sines, cosines, unit circles, vectors, graphs of trigonometric functions, polar coordinates, trigonometric identities, and trigonometric equations.

Prerequisite(s): appropriate Accuplacer score or MTH1280 with a grade of a C or higher.

Math 2200 CCP:
Limits, continuity, derivatives, rules of differentiation, differentiation of the trigonometric, inverse trigonometric, logarithmic, and exponential functions, related rates, linear approximations and differentials, extrema, curve sketching, Mean Value Theorem, optimization problems, Newton's method, Fundamental Theorem of Calculus, definite and indefinite integrals, integration by substitution.

Prerequisite(s): MTH1340 with a grade of C or better or equivalent Accuplacer score.

<u>Science</u>
Advanced Physical Science:
High school science course that contributes to the Ohio Graduation Test and develops standards-based knowledge and skills. Course includes atoms, chemical reactions, physical properties, mixtures and solutions, laws of motion, forces, energy, waves, historical perspectives and emerging issues; relationship between technology and science; diversity of scientific investigations, scientific theories, scientific literacy, scientific conclusions, and modeling investigations.
*Completed first time in one semester.

Physical Science (132220):
High school science course that contributes to the Ohio Graduation Test and develops standards-based knowledge and skills. Course includes atoms, chemical reactions, physical properties, mixtures and solutions, laws of motion, forces, energy, waves, historical perspectives and emerging issues; relationship between technology and science; diversity of scientific investigations, scientific theories, scientific literacy, scientific conclusions, and modeling investigations.

Advanced Biology (132330):
Advanced high school course that contributes to competencies beyond the Ohio Graduation Test. Course develops specialized content to extend connections, depth, and detail of biology, including concepts in anatomy, physiology, ecology, behavior, evolution, genetics, cell biology, microbiology, diversity, growth, and human biology. *Completed first time in one semester.

Biology (132230)
High school level course that satisfies Ohio's science graduation requirements as required by section 3313.603 of the Ohio Revised Code which requires inquiry-based laboratory experiences that engage students in asking valid scientific questions and gathering and analyzing information. Content from this course contributes to the Ohio Graduation Test. Course includes content found in Ohio's New Learning Standards and Model Curriculum for Science, High School Biology.

Advanced Chemistry (130301):
The study of the composition, structure, properties of, and changes in matter, including the accompanying energy phenomena. *Completed first time in one semester.

Chemistry (130301):
The study of the composition, structure, properties of, and changes in matter, including the accompanying energy phenomena.

Advanced Physics (130302):
The study of matter and energy, including the study of phenomena associated with mechanics, heat, wave motion, sound, electricity and magnetism, light, and atomic and nuclear structure. *Completed first time in one semester.

Physics (130302):
The study of matter and energy, including the study of phenomena associated with mechanics, heat, wave motion, sound, electricity and magnetism, light, and atomic and nuclear structure.

Environmental Science (132350):
Advanced high school level course that satisfies Ohio's science graduation requirements as required by section 3313.603 of the Ohio Revised Code, which requires inquiry-based laboratory experiences that engage students in asking valid scientific questions and gathering and analyzing information. Course

includes content found in Ohio's New Learning Standards and Model Curriculum for Sci-ence, High School Environmental Science.

Social Studies

Advanced Government/Economics(American):
The study of institutions and processes through which decisions are made for the United States. *Completed first time in one semester.

Government/Economics (American) (150308):
The study of institutions and processes through which decisions are made for the United States.

Advanced History (American):
The study of America's past.

History (American) (150810):
The study of America's past.

Advisory (159999):
The study of specialized social studies topics (including community service courses per ORC 3313.60.5).

Advanced World History (150890):
The study of the world's past.

World History (150890):
The study of the world's past.

Fine Arts:

Visual Art I (020012):
A study of the knowledge, skills and processes for observing, creating, responding and communicating in ways that are unique to visual art. Art production and the construction of meaning in visual artworks are complementary learning activities. Course content may include meaningful connections between visual art and other disciplines to enable students to understand art in a broader context.

Visual Art II (020012):
A study of the knowledge, skills and processes for observing, creating, responding and communicating in ways that are unique to visual art. Art production and the construction

of meaning in visual artworks are complementary learning activities. Course content may include meaningful connections between visual art and other disciplines to enable students to understand art in a broader context.
Prerequisite: Successful completion of Visual Art I.

Music Appreciation (120800):
Organized subject matter and learning experiences designed to further pupils' knowledge, comprehension, and appreciation of various types and styles of music.

Choir (120400):
Learning experiences designed for the study of vocal / choral repertoire and the development of vocal / choral skills through solo and ensemble performance.

Band (120500):
Learning experiences designed for the study of instrumental repertoire and the development of instrumental skills through solo and ensemble performance.

Orchestra (129999):
A music course that is given for high school credit toward gradua-tion that is different in scope from any of the other SUBJECT CODES described above and which addresses important content (knowledge and skills) in the study of music.

Career Technical Education

Agriculture, Food and Natural Resources (010105):
This is the first course in the Agricultural and Environmental Systems career field. It introduces students to the pathways that are offered in the Agricultural and Environmental Systems career field. As such, learners will obtain fundamental knowledge and skills in food science, natural resource management, animal science and management, plant and horticultural science, power technology and biotechnology. Students will be introduced to the FFA organization and begin development of their leadership ability.

Environmental Science for Agriculture and Natural Resources (010720):
Learners will study relationships between organisms and their environment. Principles of biogeochemical cycles, air-water-land relationships, non-point pollution, and wetlands will be applied. Learners will examine economic fundamentals of resource development,

agriculture sustainability, energy needs and pollution control. Learners will analyze and interpret data gathered from ecosystems, population studies, forest management practices, pesticide use, land use and waste management. Learners will develop responses to environmental problems and develop management strategies for responsible conservation and resource development.

Animal and Plant Biotechnology (012010):
Learners will apply principles of chemistry, microbiology and genetics to plant and animal research and product development. They will describe the importance of biotechnology in society and globalize the issues that have affected agricultural biotechnology. Students will apply genetic principles to determine genotypes and phenotypes. Students will describe the parts and functions of animal and plant cells and their importance in biochemistry.

Science and Technology of Food (011010):
This first course in the pathway examines the research, marketing, processing and packaging techniques applied to the development of food products. Learners will examine principles of food preservation techniques and determine correlations to food sensory, shelf life and food stability. Learners will examine and develop food safety, sanitation, and quality assurance protocol. Government regulations and food legislation will be examined and the implications to food science and technology will be identified.

Principles and Practices of Bioscience (012015):
Learners will demonstrate proper techniques and procedures that apply in a laboratory environment. They will examine the theory of application and will operate various analytical instruments. Students will apply current Good Laboratory Practice and Good Manufacturing Practices. Learners will demonstrate proper safety procedures used in the laboratory and abide by the compliance standards of regulatory agencies.

Bioresearch (012025):
Learners in this course will apply knowledge of bioinformatics, plant and animal microbiology, and chemistry to data mining and laboratory techniques. Students will perform procedures of developing bio-products to solve issues facing agriculture. In this course, students will also be introduced to bioinformatics related to genome analysis for research and present their overall findings.

Agriculture and Environmental Science Capstone (010190):

The capstone is the final course in the Career Tech pathway at Global Impact STEM Academy. Students enrolled in the capstone course will participate in a culminating project, capstone experience, senior exhibition, internship, major research project, or entrepreneur project. These capstone components will be facilitated and supervised by a student's biotechnology instructor who will also act in an advising role. Students will be expected to share their work and experiences with an authentic audience that will include business and industry partners.

Animal Health (010915):
Learners will apply principles of nutritional management for vari- ous classes of animals. Learners will analyze nutritional content/quality of feeds; formulate rations; develop feeding recommendations; identify deficiency symptoms and implement corrective methods as needed. Care/management plans are devel- oped that reflect the classification of animals and follow best practices and legal compliance. Learners will monitor/evaluate the quality of animal habitats and estimate carrying capacity as it relates to the impact of the environment and animal health.

Food Marketing and Research (011015):
Learners will focus on the stages of the research process from research planning to gathering, analysis, and interpretation of data as it relates to food marketing management. Learners will apply knowledge of food additives, nutrition, mixes and solutions to en- hance existing food products and to create new processed foods. Learners will identify and describe the impact that technological advances have on food production and availability. Cultural trends and preferences affecting product development will be examined.

Business Management for Agricultural and Environmental Systems (010115):
Students will examine elements of business, identify organizational structures and apply management skills while developing business plans, financial reports and strategic goals for new ventures or existing businesses. Learners will use marketing concepts to evaluate the marketing environment and develop a marketing plan with marketing channels, product approaches, promotion and pricing strategies. Throughout the course, students will apply concepts of ethics and professionalism while implications of business regulations will be identified.

Design Techniques (145095):
Students will learn techniques for transforming photographic images, through use of digital cameras, computers, and mobile devices. To accomplish this, they will learn software photo editing techniques including layering, color correction, masking, and special effects using current commercial and open source programs and applications.

Intro to Engineering/Engineering Principles (175002):
This course will introduce students to fundamental engineering concepts and scientific principles associated with engineering design applications. Topics include mechanisms, energy, statics, materials, and kinematics. Additionally students will learn material properties and electrical, control and fluid power systems. Students will learn to apply problem solving, research and design skills to create solutions to engineering challenges.