

Dual Enrollment Program – Mathematics and Science

(Subject to change as partnerships grow and grants become available.)

The MVCTC and Miami University Middletown (MUM) are partnering to deliver college math and science courses on the MVCTC campus during the school day. Dual enrollment is **not** Post Secondary Enrollment Option (PSEO). Dual enrollment allows students the opportunity to remain on the MVCTC campus, take a college level course, and earn **both** high school and college credit. When a student is enrolled as a dual-enrollment student, s/he is also a student at the college, and has the same benefits as any other Miami University Middletown student. Students may enroll in multiple dual enrollment courses as their schedule permits. **Math and Science course descriptions and additional prerequisites are located on the back of this flyer.**

ELIGIBILITY:

To be eligible for Miami University dual credit courses, students must have:

- Senior status, 2.5 or greater GPA, at least a C in Algebra 2 or its equivalent, at least a C in two years of high school English, and passed all parts of the OGT
- Successful completion of the COMPASS with an appropriate placement score (acceptable score is dependent on the course)
- Meet college reading proficiency requirements as determined by the COMPASS
- Completion of the college application process and payment of the application fee
- Parent permission
- Willingness to accept the challenge and rigor of a college course and to study accordingly
- Willingness to pay reduced tuition for the course
- If the student does not earn a grade of 'C' or better, withdraws, or moves out of the district after a pre-determined date, there will be a required reimbursement to MVCTC to recover the tuition reduction paid by the district, in addition to the tuition already paid.
- Meet MVCTC and MUM deadlines
- Be willing to communicate with MVCTC instructor(s) if extra intervention is needed
- Be willing to take responsibility for your own education
- Have paid all MVCTC fees
- **Course offerings are dependent on enrollment and may be canceled. Students will be scheduled into their next class choice.**

TESTING:

COMPASS testing will take place on the MVCTC campus in our testing center in February, March, and April, 2012.

GET A HEAD START ON YOUR FUTURE:

For additional information or to set up a testing time, please contact Dr. Nicholas Weldy, Academics Supervisor, at (937) 854-6380 or nweldy@mvctc.com.

MATHEMATICS:

Calculus (MTH 151, Year Long Course) 5 Sem. Hours

This course begins with a review of trigonometry as it relates to the study of calculus. It then introduces topics such as limits, differentiation, derivatives, antiderivatives, integrals and integration of functions. Students will find and evaluate finite and infinite limits graphically, numerically, and analytically. Methods used include: The Chain Rule, Implicit Differentiation, and the First and Second Derivative Test. Students will also learn how to solve simple differential equations that can be solved by separation of variables and use them to solve applied problems. Students enrolling in this course need to have a solid math background and have completed Pre-calculus with a 'C' or Functions and Trigonometry with an 'A' or 'B' **in addition to appropriate placement on the COMPASS test.** Students will also receive 1 credit of high school "College Calculus" upon successful completion of the course.

College Intermediate Algebra (MTH 102, Semester Long Course) 3 Sem. Hours

Introduction to functions and a study of algebra topics including: factoring; operations with rational expressions, radical expressions and complex numbers; relations and functions; solving equations with rational expressions, equations with radical expressions, quadratic equations by completing the square and the quadratic formula, equations quadratic in form, systems of linear equations in two and three variables, applied problems, compound and absolute value inequalities, quadratic and rational inequalities; equations of lines; simplifying radical expressions; graphing lines and parabolas. **Students should have a solid background in Algebra in addition to appropriate placement on the COMPASS test.** This course is typically followed by Dual Enrollment Statistics 2nd semester. Students will also receive 1 credit of high school "College Algebra" upon successful completion of the course.

Pre-Calculus (MTH 123, Year Long Course) 3 Sem. Hours

This course provides a review of algebra topics important for calculus. Investigation of functions, polynomials, rational functions, logarithmic and exponential functions, trigonometric functions and their inverses, nonlinear systems, and applications of functions. This course presumes students are well versed in algebra processes and can apply them to descriptive problems. This course also includes writing lab reports that require explanation of mathematical concepts/principles at a level easily understood by the average student. Students will receive 1 credit of high school "College Pre-Calculus" upon successful completion of the course. **Appropriate placement on the COMPASS test is required before enrolling in the course.**

Statistics (STA 261, Semester Long Course) 4 Sem. Hours

A course designed to follow College Intermediate Algebra offered 1st semester. During the 2nd semester, this course will include descriptive statistics, basic probability, random variables, binomial and normal probability distributions, tests of hypotheses, regression and correlation, and analysis of variance. The emphasis will be on applications. Students will also receive 1 credit of high school "College Statistics" upon successful completion of the course. **Appropriate placement on the COMPASS test is required before enrolling in the course.**

SCIENCE:

Microbiology (MBI 161, Year long Course) 4 Semester Credit Hours

This introductory class in elementary microbiology gives an overview of contemporary microbiology for students interested in a single unit devoted to understanding characteristics and activities of microorganisms and their relation to health and disease. The concepts and clinical applications present a variety of practical applications with emphasis on the impact of pathogenic microorganisms on the environment, infection control and public health and everyday examples, labs and activities for MVCTC students pursuing paramedical careers. Students will actively explore via research, laboratory experiences, and classroom activities the scientific topics related to the structure and function of the human body, the homeostasis (internal balance) mechanism and its interrelatedness and interdependency of organ systems of the body and the effects of diseases and microbes on the human body. Students will create projects integrating the latest research and technology, create a notebook resource of research notes and lab protocols, and learn basic presentation skills necessary for success and career advancement. **Prerequisites include a 'B' or higher in Anatomy and Physiology in addition to appropriate placement on the COMPASS test.** Students will also receive 1 credit of high school "College Microbiology" upon successful completion of the course.

Physical Geology (GLG 111, Year Long Course) 3 Sem. Hours

The dual credit physical geology course at the Miami Valley CTC investigates the relationship between the earth's primary spheres (the atmosphere, hydrosphere, biosphere, cryosphere, lithosphere, and pedosphere), humans (the anthrosphere), and the natural environment. The physical geology portion of this course explores the properties of minerals and rocks and the geosphere's complex relationship with the entire Earth system. There is also treatment of the Earth's geophysical-geochemical properties, its internal and external processes, rock stresses and deformation, mountain building, and earthquakes, geomorphic (landscape) evolution by mass wasting, wave, stream, wind, ground water, glacial, and volcanic activity. Students will also receive 1 credit of high school "College Earth Science" upon successful completion of the course. **Students should have a solid interest in the sciences, as well as appropriate placement on the COMPASS test, before enrolling in this course.**

Physics I & II (PHY 171/183 & PHY 172/184 Lecture/Lab, Year Long Course) 6 Sem. Hours (lecture) / 2 Sem. Hours (lab)

PHY 171, during the first semester, focuses on classical mechanics and quantum physics. PHY 172, during the second semester, focuses on thermal physics, electromagnetism, and relativity. The majority of this course will be delivered via the internet with daily question and answer sessions with the MVCTC instructor. Students will require internet access along with audio and video capabilities. Lectures are viewed by students prior to attending class. Class time (two-three days per week) is used to answer questions and complete assignments. The other days will be devoted to laboratory experiments in mechanics, statistical physics, thermal, and electromagnetism. Students will conduct laboratory experiments utilizing Vernier probes, software, and a notebook computer. Labs (data collection) will be completed during the class period (two-three days per week). Completion of the data analysis and lab write up will normally occur outside of scheduled class time. **Prerequisites include a 'B' or higher in Algebra II or a 'C' or better in Functions and Trig., Pre-Calculus or an equivalent course in addition to appropriate placement on the COMPASS test. Note:** this course will require **substantial** out of class work to be completed. Students will also receive 1 credit of high school "College Physics" upon successful completion of the course.