

# Sponsored Dual Credit Program - Mathematics

## Abstract

This is an overview of the Sponsored Dual Credit program in Mathematics at Eastern Oregon University together with some general guiding principles\*.

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## 1 Overview

The Sponsored Dual Credit (SDC) program is a high-school based college-credit partnership. In this program, high school students can take courses at their high school, taught by their high school teachers, and earn credit at the partner college. This feature is commonly known as the Dual Credit (DC) program, which requires high school teachers to have either a Master Degree in the subject or the completion of at least 20 credits of graduate work in the subject. The SDC program is an expansion of the DC program to allow high school teachers with fewer qualifications to teach in partnership with and under sponsorship of the college.

In the Math department, the Pathway Coordinator is a faculty member designated to support and oversee the high school teachers who are approved to teach in partnership with the department. This person is hereafter referred to as the sponsoring faculty.

The standards of the SDC program are set by the Higher Education Coordinating Commission (HECC) and can be found at [this link](#). Below are some major ones.

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1. Curriculum:

- Courses offered through this program are cataloged courses with the same designation, number, title, credit, course descriptions, and learning outcomes as their college counterparts.
- Syllabi are to be consistent with the syllabi of EOU and are reviewed and approved by the sponsoring faculty.
- Credits are awarded based on documented student achievement consistent with the student learning outcomes and course content.

2. Faculty:

- EOU approves and authorizes high school teachers to teach the university courses.
- EOU provides training and orientation *before* high school teachers begin to teach the university courses.
- EOU is to have a clear process for regular and meaningful interactions with high school teachers to give feedback and ensure the consistency across the course sections offered by EOU. The interaction must occur at least once per term, and can occur more often depending on their level of expertise in the subject and experience in the program.
- EOU is to address high school teachers' non-compliance to the standards if that occurs. The non-compliance of the teachers may affect the awarding of university credit to the high school students.
- EOU is to give high school teachers essential academic resources comparable to those used in other sections offered on the campus.

3. Continuous improvement: EOU should conduct end-of-term student course evaluation to improve the program.

## 2 Qualification

To teach SDC math courses at EOU, a high school teacher must meet the qualifications as outlined in the table below.

<i>Course</i>	<i>Qualification</i>	<i>Endorsement</i>
Math 111 (Z/A/B)	Bachelor in Math/MathEd	Basic or Advanced
Math 112 (Z/A/B)	Bachelor in Math/MathEd	Basic or Advanced
Stat 243 (Z/A/B)	Bachelor in Math/MathEd/Stat	Basic or Advanced
Math 251	Bachelor in Math/MathEd	Advanced
Math 252	Bachelor in Math/MathEd	Advanced

The Basic endorsement is obtained by passing the [Middle Grades Mathematics Exam](#). The Advanced endorsement is obtained by passing the [Mathematics Exam](#). Most high school teachers in Oregon have the advanced endorsement by the time they obtain their teaching license.

Once approved to teach a course, the high school teacher does not need to reapply to teach the same course the following year. However, reapplication would be needed if the high school teacher has paused from teaching for EOU for more than 2 years or if serious non-compliance occurred.

### 3 Application process

High school teachers who are interested in teaching SDC courses should fill out an application form on the Early College Initiatives (ECI) website:

<https://www.eou.edu/early-college-initiatives/teachers-and-administrators/>

and submit it to the ECI office at [eci@eou.edu](mailto:eci@eou.edu).

In the application form, the high school teachers will indicate which course(s) they want to teach. More detailed description of the SDC courses can be found in Section 5 below. High schools in Oregon operate on a semester calendar, while EOU operates on a quarter calendar. The Fall semester at the high school corresponds to the Winter term at EOU. The Spring semester at the high school corresponds to the Spring term at EOU. Therefore, high school students who take an SDC class in the Fall/Spring semester at their high school should enroll in the Winter/Spring term, respectively, at EOU for college credit.

The applications will be reviewed and approved first by the Pathway Coordinator or the Chair of the Math Department, and subsequently approved by the Dean of the College of STMHS. If further information is needed to reach a decision, an interview with the applicant would be appropriate. The pathway coordinator will act as the sponsoring faculty to oversee the teaching of high school teachers.

### 4 Oversight

The sponsoring faculty can oversee the teaching of high school teachers in the following areas.

1. *Syllabus*: to make sure that the course description, course content, learning outcomes, and exam policy are consistent with EOU's standard syllabus.
2. *Learning management system (LMS)*: to record evidence of student achievement.
3. *Interaction*: a process of regular and meaningful interaction to provide teacher with support and timely feedback.
4. *Training*: to provide the training a high school teacher either at a general level (not depending on the courses they teach) or specific to the courses they teach.
5. *Course evaluation*: to collect student feedback and discuss improvement for the program.

#### 4.1 Syllabus

After being approved, a high school teacher will be given a standard syllabus of the course they teach. This is a skeleton syllabus approved by the Educational Policy and Curriculum Committee (EPCC), or if such is unavailable, a minimal syllabus that contains common practices of EOU faculty members. This syllabus contains the following information:

- course title, number, credit hour,
- course description,
- learning outcomes,

- prerequisites,
- textbook,
- software,
- exam policies related to the use notecards or calculators,
- learning resources: online tutoring and writing tutoring,
- University's policies on academic misconducts.

The high school teacher will fill in other details and resubmit to the sponsoring faculty for approval. The first draft should be submitted no later than 2 weeks before the first class meeting at their high school.

*Prerequisites:* for Math 111 (A/B/Z) and Stat 243 (A/B/Z), it is at the high school teacher's discretion to decide whether a student is sufficiently prepared to take those classes. To take Math 112, 251, 252, a student must either meet the prerequisites determined by EOU, which is the successful completion of Math 111, 112, 251, respectively, or be placed in such by Accuplacer testing.

*Textbook:* because most textbooks cover the same materials with some variation in the order or style of presenting the subject, a high school teacher may use a different textbook than the one used at EOU. When supplement materials are needed by the teacher or students, such as extra exercises, examples, or practice tests, the sponsoring faculty should help provide.

*Software:* Stat 243 at EOU uses Minitab, a statistical software. The Calculus series (Math 251/252/253/254) use Mathematica, a mathematical software, for lab assignments. Using their EOU login, the teacher and high school students can access both software remotely. The teacher decides if it is appropriate to require their students to use such software for the class. If it is required, the expectation should be clearly stated on the syllabus. The sponsoring faculty or EOU IT can provide technical assistance if needed.

*Calculators:* The high school teacher decides if it is appropriate to allow the use of scientific calculators in the exams. Graphic calculators should not be allowed. The policy regarding calculator should be clearly stated on the syllabus.

*Other resources:* The infrastructure of the high school is specialized to provide a typical high school student with most resources and services they need. When enrolled for EOU credit, they are also entitled to utilize EOU resources for their learning such as the Library, online databases, and the eTutoring service.

## 4.2 Learning management system

High school teachers will be given an LMS shell for their sections as soon as they are assigned to teach a course. Currently, EOU is using Canvas. Using LMS is a convenient way to record evidence

of student achievements. It also helps the sponsoring faculty to provide feedback quickly. The office of Early College Initiatives will provide training for high school teachers to use Canvas.

Most high schools use Google Classroom, while most colleges use Canvas. Thus, it is helpful if students are familiar with Canvas while in high school. However, switching from Google Classroom to Canvas might meet the opposition from the high school administration. When that is the case, the sponsoring faculty consults with the teacher to identify an alternate venue to store evidences of student achievement (quiz, exam,...) such as using a shared Google Drive or OneDrive folder.

### **4.3 Interaction**

The sponsoring faculty should hold regular check-up meetings with each high school teacher to provide meaningful and individualized support for them. This can be done remotely, weekly or biweekly, depending on the teacher's need and experience. Possible topics for a discussion include but are not limited to:

- how they teach a topic (or how they planned to teach it),
- any supplemental materials or resources they need for their teaching,
- the common mistakes students made and ways to help them,
- plans for the upcoming exam,
- any issues with Canvas.

### **4.4 Training**

- Accessibility report on Canvas: how to minimize the inaccessibility issues.
- Email policy: as a general rule at EOU, teachers are encouraged to use their EOU email to communicate with their students. If this is not feasible for some reason, communication through Canvas messages is encouraged.

Depending on the specific course they teach, high school teachers may be provided with the training specific to the courses they teach. That may include

- having high school teachers take the recent final exam of the course that they will be teaching. That will give them an idea of the level of proficiency an EOU student must obtain to pass the course.
- advice on some topics that are traditionally considered as challenging for high school students or teachers.
- usage of a software used in the course, for example, Mathematica and Minitab.

### **4.5 Course evaluation**

The sponsoring faculty designs a survey to collect feedback from students and the high school teachers to improve the SDC program. Consultation with the Math Department and the Dean is appropriate.

## 4.6 Non-compliance

What are considered as severe non-compliances? What are the consequences?

## 5 List of SDC courses

The following courses are currently available for the SDC program. The course numbers that end with 'Z' are standardized across all colleges and universities in Oregon. The courses that end with 'A' and 'B' are the first and second half of the standardized course which allow for a slower pace.

1) Math 111Z: *Precalculus I: Functions* (offered every term)

A course primarily designed for students preparing for trigonometry or calculus. This course focuses on functions and their properties, including polynomial, rational, exponential, logarithmic, piecewise-defined, and inverse functions. These topics will be explored symbolically, numerically, and graphically in real-life applications and interpreted in context. This course emphasizes skill building, problem solving, modeling, reasoning, communication, connections with other disciplines, and the appropriate use of present-day technology.

2) Math 111A: *Precalculus I: Functions Part I* (usually offered in the Fall terms)

This course is the first part of a two course sequence. The two courses will be equivalent in content and credit to Math 111Z. Topics include equations and inequalities in one variable, a careful treatment of the function concept, and an examination of the properties and application of several important families of functions: polynomial, rational, exponential, and logarithmic.

3) Math 111B: *Precalculus I: Functions Part II* (usually offered in the Spring terms)

This course is the second part of a two course sequence. Topics include equations and inequalities in one variable, a careful treatment of the function concept, and an examination of the properties and application of several important families of functions: polynomial, rational, exponential, and logarithmic. Any requirement satisfied by Math 111Z will also be satisfied by the pair of courses Math 111A and Math 111B.

4) Math 112Z: *Precalculus II: Trigonometry* (offered every term)

A course primarily designed for students preparing for calculus and related disciplines. This course explores trigonometric functions and their applications as well as the language and measurement of angles, triangles, circles, and vectors. These topics will be explored symbolically, numerically, and graphically in real life applications and interpreted in context. This course emphasizes skill building, problem solving, modeling, reasoning, communication, connections with other disciplines, and the appropriate use of present-day technology.

5) Math 112A: *Precalculus II: Trigonometry, Part I*

This course is the first of a two-part course sequence to be offered. The two course sequence will be equivalent in credit and content to Math 112Z. In this course, students experience a detailed treatment of exponential, logarithmic, trigonometric, and inverse trigonometric functions

designed to prepare them for calculus.

6) Math 112B: *Precalculus II: Trigonometry, Part II*

This course is the second of a two-part course sequence to be offered. In this course, students experience a detailed treatment of trigonometric, inverse trigonometric functions designed to prepare them for calculus. Any requirement satisfied by Math 112 will also be satisfied by the pair of courses Math 112A and Math 112B.

7) Math 243Z: *Elementary Statistics I* (offered every term)

A first course in statistics focusing on the interpretation and communication of statistical concepts. Introduces exploratory data analysis, descriptive statistics, sampling methods and distributions, point and interval estimates, hypothesis tests for means and proportions, and elements of probability and correlation. Technology will be used when appropriate.

8) Math 243A: *Elementary Statistics I, Part I* (offered every term)

This course is the first of a two course sequence. The two course sequence will be equivalent in credit and content to STAT 243 "Elementary Statistics". Topics include experimental design, introduction to histograms, the normal distribution, sampling, the Law of Averages, and the Central Limit Theorem.

9) Math 243B: *Elementary Statistics I, Part II* (offered every term)

This course is the second of a two course sequence. Topics include sampling error, confidence intervals, and hypothesis testing including z-tests and chi-square tests. Any requirement satisfied by Stat 243Z will also be satisfied by the pair of courses Stat 243A and Stat 243B.

10) Math 251: *Calculus I* (offered in the Fall terms)

Differential Calculus including functions, limits, continuity, differentiation formulas, implicit differentiation, higher order derivatives, related rates, differentials, optimization problems, how the derivative affects the shape of a graph and an introduction to antiderivatives.

11) Math 251A: *Differential Calculus, Part I* (offered in the Fall terms).

This course is the first part of a two course sequence. The two course sequence will be equivalent in content and credit to Math 251 (Calculus I). Topics include functions, limits, continuity, differentiation formulas, implicit differentiation, higher order derivatives, related rates, differentials, optimization problems, how the derivative affects the shape of a graph, and an introduction to antiderivatives. Any requirement satisfied by Math 251 will also be satisfied by the pair of courses Math 251A and Math 251B.

12) Math 251B: *Differential Calculus, Part II* (offered in the Winter terms)

This course is the second part of a two course sequence. The two course sequence will be equivalent in content and credit to Math 251 (Calculus I). Topics include functions, limits, continuity, differentiation formulas, implicit differentiation, higher order derivatives, related rates,

differentials, optimization problems, how the derivative affects the shape of a graph, and an introduction to antiderivatives. Any requirement satisfied by Math 251 will also be satisfied by the pair of courses Math 251A and Math 251B.

13) Math 252: *Calculus II* (offered in the Winter terms)

Integral Calculus including the definite integral, the fundamental theorem of Calculus, area between curves, volumes by slicing, L'Hospital's Rule, the Calculus of the exponential and logarithmic functions, techniques of integration, improper integrals and arc length.