

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: EDUC 435		Number of Credits: 3 Course credit policy (105)													
Course Full Title: Designs for Learning Secondary Mathematics Course Short Title: Secondary Mathematics															
Faculty: Faculty of Education, Community, and Human Development		Department: Teacher Education													
Calendar Description: Introduces fundamental pedagogical concepts and skills necessary for the effective teaching of secondary mathematics using the B.C. Ministry of Education curriculum, with an emphasis on mathematical reasoning, conceptual understanding, problem solving, and communication. Attitudes and beliefs about mathematics will be explored. Indigenous resources, pedagogies, and content are included, with consideration of how mathematics can be used to address equity, diversity, and inclusion issues.															
Prerequisites (or NONE):		Admission to the Bachelor of Education.													
Corequisites (if applicable, or NONE):															
Pre/corequisites (if applicable, or NONE):															
Antirequisite Courses <i>(Cannot be taken for additional credit.)</i> Former course code/number: Cross-listed with: Equivalent course(s): <i>(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)</i>		Course Details Special Topics course: No <i>(If yes, the course will be offered under different letter designations representing different topics.)</i> Directed Study course: No <i>(See policy 207 for more information.)</i> Grading System: Credit/No Credit Delivery Mode: May be offered in multiple delivery modes Expected frequency: Annually Maximum enrolment (for information only): 32													
Typical Structure of Instructional Hours <table border="1"> <tr> <td>Lecture/seminar</td> <td>15</td> </tr> <tr> <td>Tutorials/workshops</td> <td>30</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>Total hours</td> <td>45</td> </tr> </table>		Lecture/seminar	15	Tutorials/workshops	30							Total hours	45	Prior Learning Assessment and Recognition (PLAR) PLAR cannot be awarded for this course because: Connected to practicum	
Lecture/seminar	15														
Tutorials/workshops	30														
Total hours	45														
Scheduled Laboratory Hours Labs to be scheduled independent of lecture hours: <input type="checkbox"/> No <input type="checkbox"/> Yes		Transfer Credit (See bctransferguide.ca) Transfer credit already exists: Yes Submit outline for (re)articulation: No <i>(If yes, fill in transfer credit form.)</i>													
Department approval		Date of meeting: December 8, 2021													
Faculty Council approval		Date of meeting: May 6, 2022													
Undergraduate Education Committee (UEC) approval		Date of meeting: June 17, 2022													

Learning Outcomes *(These should contribute to students' ability to meet program outcomes and thus Institutional Learning Outcomes.)*

Upon successful completion of this course, candidates will be able to:

- Apply strategies found in the B.C curriculum for various mathematics courses taught at the secondary level.
- Apply constructivist learning theory for designing learning activities in secondary mathematics that foster mathematical reasoning, conceptual understanding, problem solving, and communication.
- Select rich tasks for immersive problem-solving experiences that promote mathematical reasoning.
- Use a variety of manipulatives or representations to develop pupils' conceptual understanding.
- Design a short sequence of lessons in mathematics, including activities that use cooperative learning techniques and other techniques that foster a wide range of learning styles and support mathematical reasoning.
- Integrate mathematics with curriculum activities (e.g., in science, social studies) as possible.
- Use strategies for on-going assessment for pupils' understanding of content, skills, and problem solving, addressing a wide variety of student's learning needs.
- Integrate the use of information technology in the learning of mathematics.
- Integrate Indigenous resources, content, and pedagogy into lesson plans.
- Utilize the teaching of mathematical concepts to address issues related to equity, diversity, and inclusion.

Recommended Evaluation Methods and Weighting *(Evaluation should align to learning outcomes.)*

Assignments:	100%	%	%
	%	%	%

Details:

Assignments: lesson plans (40%), in class teaching (20%), group presentation (20%), reflection (20%)

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Texts and Resource Materials *(Include online resources and Indigenous knowledge sources. [Open Educational Resources](#) (OER) should be included whenever possible. If more space is required, use the [Supplemental Texts and Resource Materials form](#).)*

Type	Author or description	Title and publication/access details	Year
1. Online resource	Ministry of Education	BC's Curriculum: Mathematics	2021
2. Textbook	Liljedahl	Building thinking classrooms in mathematics: Grades K – 12	2020
3. Textbook	Van de Walle	Elementary and middle school mathematics: Teaching developmentally	2015
4.			
5.			

Required Additional Supplies and Materials *(Software, hardware, tools, specialized clothing, etc.)*

Math manipulatives

Course Content and Topics

- How constructivist learning theory influences classroom practice
- The nature of mathematics and learning in mathematics
- Pupil's conceptions of math and implications for teaching and learning
- Numeracy initiatives in B.C.
- Use of manipulatives, activities, and strategies to promote mathematical reasoning, understanding, and problem solving
- Rich tasks in mathematics
- Cooperative learning and group work strategies
- Introduction to use of computers, mobile devices, and calculators in the mathematics classroom
- Application of mathematics into other subject areas, such as science and social studies, to show its relevancy
- Lesson planning and unit planning
- B.C. Secondary Mathematics Curriculum for various courses taught in the standard secondary school
- Using a range of on-going assessment strategies for mathematics activities
- Resources available for mathematics teaching
- Indigenous resources, pedagogies, and content available for the teaching of mathematics
- Utilizing mathematics to address issues related to equity, diversity, and inclusion