EDUC 562 S01: Mathematics Instruction in the Elementary Classroom  
Winter, 2023

<table>
<thead>
<tr>
<th>Section</th>
<th>Instructor</th>
<th>Time</th>
<th>Location</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>S01</td>
<td>Prof. Jo Towers</td>
<td>11.30-13:20</td>
<td>Online</td>
<td><a href="mailto:towers@ucalgary.ca">towers@ucalgary.ca</a></td>
</tr>
</tbody>
</table>

Class Dates: Wednesdays, 11th January, 2023 - 8th February, 2023

Last Day to Add/Drop/Swap: Due to the non-standard dates associated with this program, please check your Student Centre for the important dates pertaining to your section.

Pre-requisite: Due to the multiple pathways in the Bachelor of Education, please consult Undergraduate Programs in Education for questions related to pre-requisite courses.

Office Hours: By appointment only

Email: Students are required to use a University of Calgary (@ucalgary.ca) email address for all correspondence.

**COURSE DESCRIPTION:**
The intent of this seminar is to introduce students to concepts, theory, and planning related to teaching mathematics in the elementary grades. Topics will include learning to think mathematically, inquiry-oriented approaches to teaching mathematics, planning that addresses the needs of diverse learners, and authentic assessment practices.

**LEARNER OUTCOMES:**
Over the course of the semester, students will:

1) Develop a foundational understanding of the nature of discourse in the discipline, as related to teaching and learning, including specialized language, concepts, and terminology;

2) Become familiar with the resources available for designing learning and assessment in mathematics.

3) Explore and apply introductory theory related to the teaching of the discipline with an emphasis on learning to design discipline-based tasks and assessment processes and creating an adaptive classroom learning environment to better meet the needs of today’s diverse learners.

**COURSE DESIGN AND DELIVERY:**
This course will be delivered online via Zoom with supplementary engagement in a D2L environment.

**REQUIRED RESOURCES:**
Required readings will be made available through D2L.

**ADDITIONAL RESOURCES:**


**WEEKLY COURSE SCHEDULE:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings and Tasks</th>
<th>Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week of Jan. 9-13, 2023</td>
<td>What is mathematics?</td>
<td>Alberta Education. (2022). <em>Program of Study for Mathematics, K-6</em> (see link under additional resources)</td>
<td></td>
</tr>
<tr>
<td>Week of Jan. 16-20, 2023</td>
<td>Teaching for mathematical understanding</td>
<td>TBA</td>
<td></td>
</tr>
<tr>
<td>Week of Jan. 23-27, 2023</td>
<td>Planning for teaching mathematics</td>
<td>TBA</td>
<td>Learning Task 1 Due Wednesday 25th January, 2023</td>
</tr>
<tr>
<td>Week of Jan. 30-Feb 3, 2023</td>
<td>Mathematics and Social Justice/</td>
<td>TBA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Culturally-relevant pedagogy/Teaching diverse learners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week of Feb 6-10, 2023</td>
<td>Assessment</td>
<td>TBA</td>
<td>Learning Task 2 Due Wednesday 8th February, 2023</td>
</tr>
</tbody>
</table>

**CHANGES TO SCHEDULE:**
Please note that changes to the schedule may occur to meet the emerging needs and dynamics of the participants in the course.
LEARNING TASKS AND ASSESSMENT:

LEARNING TASKS OVERVIEW

<table>
<thead>
<tr>
<th>LEARNING TASK</th>
<th>DESCRIPTION OF LEARNING TASK</th>
<th>GROUP / INDIVIDUAL</th>
<th>WEIGHT</th>
<th>DUE DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Analysis of a Learning Design and Assessment Plan</td>
<td>Group</td>
<td>50%</td>
<td>Wednesday 25th January, 2023</td>
</tr>
<tr>
<td>2</td>
<td>Teaching Resources</td>
<td>Individual</td>
<td>50%</td>
<td>Wednesday 8th February, 2022</td>
</tr>
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There are two required Learning Tasks for this course.

LEARNING TASK 1: Analysis of a Learning Design and Assessment Plan—DUE: Wednesday 25th January, 2023

For this assignment, in groups, you will analyze a learning design and assessment plan (lesson plan) that you have found online. The purposes will be to foster professional learning conversations and build knowledge about the features of well-designed learning and assessment plans. You will provide a two-to-three-page (double-spaced, 12-point font) critical review of the chosen learning design and assessment plan.

CRITERIA FOR ASSESSMENT OF LEARNING TASK 1

<table>
<thead>
<tr>
<th></th>
<th>A+/A</th>
<th>A-/ B+</th>
<th>B / B-</th>
<th>C+ / lower</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment of Learning Plan</strong></td>
<td>-addresses the elements of a learning plan as listed in the assignment description</td>
<td>-addresses in a thorough, detailed, and well-supported assessment.</td>
<td>-addresses in a thorough, detailed and well-supported assessment. Others require strengthening.</td>
<td>-not addressed at all or are addressed in a cursory manner.</td>
</tr>
<tr>
<td><strong>Grounding in theory</strong></td>
<td>-makes connections to the literature, including the Program of Study. Theoretical positioning is highly effective, and well-explained.</td>
<td>-makes some connections to the literature, sometimes including the Program of Study. Theoretical positioning is usually effective, and well-explained. Some connections require strengthening.</td>
<td>-makes few connections to the literature or Program of Study. Theoretical positioning is sometimes inappropriate, and underexplained.</td>
<td>-Connections to theory and/or Program of Study are missing, incomplete, or made in a cursory manner.</td>
</tr>
<tr>
<td><strong>Presentation of ideas</strong></td>
<td>-2-3 pages, double-spaced Paper is 2-3 pages. Writing style is academic.</td>
<td>Paper is 2-3 pages. Writing style is primarily academic.</td>
<td>Paper is 2-3 pages. Writing style is sometimes academic, sometimes informal.</td>
<td>Paper exceeds 3 pages or is less than 2.</td>
</tr>
</tbody>
</table>
Resources for Learning Task 1:

Alberta Assessment Consortium (Username: teachers Password: master)

Doucette Library – Library guide for lesson planning: https://library.ucalgary.ca/guides/lesson_planning_resources

LEARNING TASK 2: Teaching Resources—DUE: Wednesday 8th February, 2023

For this assignment, you will source, and post onto D2L for sharing with the class, a minimum of 2 teaching ideas that demonstrate that you understand what it means to choose rich, flexible tasks that will engage diverse learners in inquiry while addressing topics relevant to the 2022 Alberta Program of Study for Mathematics, K-6. These are not full-blown lesson plans; rather, they are brief but complete ideas for teaching that contain all the information necessary to be developed into lesson plans for a specific group of learners in the future. Further details about this assignment will be discussed in class.

**Criteria for Assessment of Learning Task 2**

Teaching resources will be assessed based on the following criteria:

1. Quality, meaningfulness, and mathematical integrity of the teaching ideas.
2. Breadth (demonstrated by covering a number of topic (or even subject) areas within one idea, or by showing how your idea could be used with several grade or ability levels.)
3. Use-ability (there should be enough detail to be useful, but your descriptions should be brief enough for browsing.)
4. Clarity (the ideas should enable the reader to imagine how the idea could be used in the classroom, what core mathematical concept it addresses, what materials are needed, how much time should be allotted, how to launch the task, how to extend it or make it simpler for diverse learners, etc.)
5. Inquiry-oriented (the ideas should demonstrate that you understand what it means to choose rich, flexible tasks that will engage diverse learners in inquiry while addressing topics relevant to the Alberta Program of Study for Mathematics.)

**The Expectation of Excellence in Professional Work**

Please review the Academic Calendar carefully. It describes the program and provides detailed schedules and important dates. It contains information on expectations for student work and professional conduct. In addition, procedures are described regarding concern about student performance in the program. Please pay especially careful attention to details and descriptions in the following topic areas:
The Importance of Attendance and Participation in Every Class

As this is a professional program, experiences are designed with the expectation that all members will be fully involved in all classes and in all coursework experiences. As you are a member of a learning community your contribution is vital and highly valued, just as it will be when you take on the professional responsibilities of being a teacher. We expect that you will not be absent from class with the exception of documented instances of personal or family illness or for religious requirements.

Engagement in Class Discussion and Inquiry

Another reason for the importance of attendance and participation in every class is that the course involves working with fellow students to share ideas and thinking. For example, each class you will work with a small group to engage fellow students in discussions on work being considered in class. You will also help other groups by providing ideas for scholarly inquiry in assignments. If you find that you are experiencing difficulties collaborating as a group, please inform the instructor.

Expectations for Writing

All written assignments will be assessed at least partly on writing skills. Writing skills include not only surface correctness (grammar, punctuation, sentence structure, etc.) but also general clarity and organization. Sources must be properly documented. If you need help with your writing, you may use the writing support services in the Learning Commons. For further information, please refer to the official online University of Calgary Calendar, Academic Regulations, E. Course Information, E.2: Writing Across the Curriculum: http://www.ucalgary.ca/pubs/calendar/current/e-2.html

Late Submissions

All late submissions of assignments must be discussed with the instructor prior to the due date. Students may be required to provide written documentation of extenuating circumstances. A deferral of up to 30 days may be granted at the discretion of the Associate Dean of Undergraduate Programs with accompanying written evidence.

Issues with Group Tasks

With respect to group work, if your group is having difficulty collaborating effectively, please contact the instructor immediately. If a group is unable to collaborate effectively or discuss course materials online in a timely manner, the instructor may re-assign members to different groups or assign individual work for completion.

Grading

<table>
<thead>
<tr>
<th>Grade</th>
<th>GPA Value</th>
<th>%</th>
<th>Description per U of C Calendar</th>
</tr>
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<tbody>
<tr>
<td>A+</td>
<td>4.0</td>
<td>95-100</td>
<td>Outstanding</td>
</tr>
<tr>
<td>A</td>
<td>4.0</td>
<td>90-94</td>
<td>Excellent – Superior performance showing comprehensive understanding of the subject matter</td>
</tr>
<tr>
<td>A-</td>
<td>3.7</td>
<td>85-89</td>
<td>Good - clearly above average performance with knowledge of subject matter generally complete</td>
</tr>
<tr>
<td>B+</td>
<td>3.3</td>
<td>80-84</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
<td>75-79</td>
<td></td>
</tr>
<tr>
<td>B-</td>
<td>2.7</td>
<td>70-74</td>
<td></td>
</tr>
<tr>
<td>C+</td>
<td>2.3</td>
<td>65-69</td>
<td>Satisfactory - basic understanding of the subject matter</td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
<td>60-64</td>
<td></td>
</tr>
</tbody>
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### Students in the B.Ed. program

Students in the B.Ed. program must have an overall GPA of 2.5 in the semester to continue in the program without repeating courses.

### Academic Accommodation

It is the student’s responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: [https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf](https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf). Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: [ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf](https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf). Students needing an accommodation in relation to their coursework based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to their Instructor.

### Academic Misconduct

For information on academic misconduct and its consequences, please see the University of Calgary Calendar at [http://www.ucalgary.ca/pubs/calendar/current/k.html](http://www.ucalgary.ca/pubs/calendar/current/k.html)

### Attendance/ Prolonged Absence

Students may be asked to provide supporting documentation for an exemption/special request. This may include, but is not limited to, a prolonged absence from a course where participation is required, a missed course assessment, a deferred examination, or an appeal. Students are encouraged to submit documentation that will support their situation. Supporting documentation may be dependent on the reason noted in their personal statement/explanation provided to explain their situation. This could be medical certificate/documentation, references, police reports, invitation letter, third party letter of support or a statutory declaration etc. The decision to provide supporting documentation that best suits the situation is at the discretion of the student.

Falsification of any supporting documentation will be taken very seriously and may result in disciplinary action through the Academic Discipline regulations or the Student Non-Academic Misconduct policy. [https://www.ucalgary.ca/pubs/calendar/current/n-1.html](https://www.ucalgary.ca/pubs/calendar/current/n-1.html)

### The Freedom of Information Protection of Privacy Act

The Freedom of Information Protection of Privacy Act prevents instructors from placing assignments or examinations in a public place for pickup and prevents students from access to exams or assignments other than their own. Therefore, students and instructors may use one of the following options: return/collect assignments during class time or during instructors’ office hours, students provide instructors with a self-addressed stamped envelope, or submit/return assignments as electronic files attached to private e-mail messages.

### For additional resources

For additional resources including, but not limited to, those aimed at wellness and mental health, student success or to connect with the Student Ombuds Office, please visit [https://www.ucalgary.ca/registrar/registration/course-outlines](https://www.ucalgary.ca/registrar/registration/course-outlines)
Education Students Association (ESA) President for the academic year is Kevin Dang, esa@ucalgary.ca.

Werklund SU Representative is Dhwani Joshi, educrep@su.ucalgary.ca.