THE UNIVERSITY OF BRITISH COLUMBIA

# Faculty *of* Education

UBC

*Department of Curriculum and Pedagogy*

EDCP 374A (3) **Curriculum and Pedagogy in Design and Technology I**
**(3 Credits) (Winter 2015)**

**Instructor:** Theresa Magee
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**WWW:** http://blogs.ubc.ca/dandt

**Office:** Scarfe Bldg., Room 2224
**Office Hours:** By appointment, M, W
**Location:** Scarfe Bldg., Room 1106
**Time:** M, W from 10:30am – 12 noon

## COURSE DESCRIPTION

This course provides an effective encounter between the "what to teach" and "how to teach." The course focuses on Design and Technology (D&T) education or the T and E in Science, Technology, Engineering, and Mathematics (STEM) education. The main goal is to provide the fundamentals for teaching design, engineering, technology education and information and communication technology, or more generally what the BC Ministry calls Applied design, Skills and Technology. One intention is to help students develop a framework for understanding themselves as a teacher, and technology as a field of study and school curriculum. A second major intention will be in providing students with an understanding of what teaching technology entails, in terms of cultural-historical, ecological-natural, existential-spiritual, ethical-personal, socio-political, and technical-empirical dimensions. A third major intention is in preparing students for their extended practicum experience leading up to their eventual role as a classroom teacher.

### Purpose of the Course
The purpose of this course is to prepare teacher candidates with the knowledge, attitudes and skills to enhance learning in the context of teaching technology education.

## COURSE OBJECTIVES
This course aims to help teachers:

1. State the philosophical basis and principles of design, technology and engineering education; and provide a rationale for implementing the study of technology (or design or engineering) at all levels – elementary, middle school, high school and adult.
2. Develop D&T and STEM curriculum and instructional strategies. Evaluate appropriate materials and develop a resource file for use in a technology, D&T, media arts or STEM course.
3. Using professional graphic design approaches, design curriculum materials that incorporate a variety of instructional media, including video.
4. Evaluate technology curriculum and recommend appropriate revisions based on findings.
5. Demonstrate an appreciation for systematic curriculum and instructional planning.

## PARTICIPATION & ASSIGNMENTS
**Students will complete the following assignments:**

1. **Participation**: Complete all readings and participate fully in Activities, Lectures and Discussions.
2. **Practicum Unit Plan**: To be completed after the two-week practicum as it will be a unit that may be taught during the 10-week extended practicum.
3. **Procedure, Safety and Information Sheets**: Produce one set of Procedure, Safety and Information sheets for the practicum as part of the unit plan package proposed.

## ASSIGNMENT SCHEDULE

| Due date | Assignment |
|---|---|
| Monday, November 23 | #1 - Procedure, Safety & Information Sheets |
| Monday, December 7 | #2 - Practicum Unit Plan (based on B/AA Course Proposal format) (include two lesson plan samples: beginning class and one in the middle of unit) |
| Monday., December 14 | All assignments must be completed. |
| | NO LATE ASSIGNMENTS ACCEPTED |

## ASSESSMENT AND MARKS
The course is graded according to the pass/fail system. Regarding pass/fail evaluation, achieving a pass is contingent on a high standard of performance. The standard for a pass within the B.Ed. program is equivalent to a B+ (76%) in UBC's standard marking system.

### General Assessment Guidelines

| PASS | From average to outstanding in all aspects of course. Average to excellent coverage of requirements for assignments. The assignments are coherent and comprehensive. Average to great examples are used to supplement ideas. Communication, demonstrations and presentations are of a high standard— the assignments look professional and are clean (nearly free of typos, few desk-top publishing problems, etc.). The formats followed adhere to the formats provided. |
|---|---|
| FAIL | An inadequate and incomplete performance. Patchy coverage of criteria with omissions in certain areas. No attempt at meeting requirements. Little attempt at being comprehensive. Minimal effort following formats. Poor communication, demonstrations and presentations. |

## POLICIES

Policies regarding attendance and missed or late assignments follows those recommended by the University and the Faculty of Education.

- **Attendance policy:** If you must miss a class, notify your instructor immediately. The nature of the Teacher Education Program is participatory. Teacher candidates who miss a significant amount of class time (i.e., more than 15% of course hours) are normally required to repeat the course. Teacher candidates are not able to proceed to practicum until all prior courses are successfully completed. See http://teach.educ.ubc.ca/students/policies-and-guides/
- **Academic Honesty and Standards, and Academic Freedom:** Please refer to *UBC Calendar 2014/2015* Policies and Regulations (Selected): http://www.students.ubc.ca/calendar
- **Academic Accommodation for Students with Disabilities:** Students with a disability who wish to have an academic accommodation should contact the Disability Resource Centre without delay (see UBC Policy #73, http://www.universitycounsel.ubc.ca/files/2010/08/policy73.pdf.

## TEXTS Required:
1. Petrina, S. (2007). *Advanced teaching methods for the technology classroom.* Hershey, PA: Information Science Publishing. Download from https://ubc.academia.edu/StephenPetrina/Textbooks
2. BC Ministry of Education Documents: All ICT and technology education IRPs. Download from Ministry http://www.bced.gov.bc.ca/irp/subject.php?lang=en&subject=Applied_Skills and https://curriculum.gov.bc.ca/sites/curriculum.gov.bc.ca/files/pdf/applied-skills.pdf
3. ITEA. (2000). Standards for Technological Literacy. Reston, VA: Author. Download from http://blogs.ubc.ca/dandt/files/2014/08/TechLitStandards.pdf

**Recommended:**

4. Braundy, M. (2012). *Men & women and tools: Bridging the divide*. Halifax, NS: Fernwood. http://fernwoodpublishing.ca/book/men-women-and-tools
5. de Vries, M. J. (2005). *Teaching about technology: An introduction to the philosophy of technology for non-philosophers*. Dordrecht, The Netherlands: Kluwer. http://www.tower.com/books/preview/isbn/1402034091
6. Crawford, Matthew B. *Shop Class as Soulcraft: An Inquiry Into the Value of Work* (The Penguin Press, 2009)

When possible, handouts are available online for download. However, a photocopying fee will be charged for any hardcopy handouts.

## COURSE OUTLINE: EDCP 374 – Winter 2015

| Unit 1: Week 1, 2, 3: Overview | |
|---|---|
| Topic | Curriculum & Pedagogy (Sept. 9) |
| | • program orientation<br>• coursework expectations<br>• assignments<br><br>BC IRP Overview, Standards for the Education, Competence and Professional Conduct of Educators in BC |
| Guiding Questions | • What are the expectations for teacher candidates` learning process in this course?<br>• What is important for teacher candidates to know? For their students to know?<br>• What is curriculum and pedagogy?<br>• What is your passion for teaching design, skills and technology education? |
| Activity | Self-portrait: who am I, where have I been, where am I going? (present for Sept. 14) |
| Readings<br>For next week | 1. *BC IRP*<br>2. https://curriculum.gov.bc.ca/sites/curriculum.gov.bc.ca/files/pdf/applied-skills.pdf<br>3. Petrina, S. (2007). *Advanced teaching methods for the technology classroom*. Hershey, PA: Information Science Publishing, Download from https://ubc.academia.edu/StephenPetrina/Textbooks Chapter 7: Justifying Technology Studies, Ch. 3: Feelings, Values, Ethics and Skills |
| | |
| Topic | C&P: Guiding Features in Technology Education (Sept. 14 and 16) |
| | • How does a teaching philosophy influence the ways of teaching?<br>• What is Technology education? When did it start?<br>• What meaning does history of Technology have for teaching in present day?<br>• How can the past influence current curriculum design?<br>• Why is it necessary to justify Technology studies?<br>• What are some approaches to curriculum and pedagogy and how do teachers select which ones to use in their subject areas?<br>• What are the values we should be considering, teaching, and practicing? |
| Readings | 1. Petrina, S. (2007). *Advanced teaching methods for the technology classroom*. Hershey, PA: Information Science Publishing, Download from https://ubc.academia.edu/StephenPetrina/Textbooks Chapter 7: Justifying Technology Studies, Ch. 3: Feelings, Values, Ethics and Skills |

| Topic | Communicating and Planning for instruction<br>Organizing Knowledge for Instruction<br>Instructional Methods and Learning Styles (Sept. 21, 23) |
|---|---|
| Guiding Questions | • What are considerations for communication and planning for instruction?<br>• What are some ways to structure and 'teach' lessons to a diverse group of learners?<br>• What environmental and class management strategies can be used to assist diverse learners?<br>• What conditions need to be considered when selecting instructional strategies?<br>• How can instructional strategies be undertaken by individual students, partners, or small groups? |
| Readings | 1. *BC IRP*<br>2. Petrina, S. (2007). *Advanced teaching methods for the technology classroom.* Hershey, PA: Information Science Publishing, Chapter 1: Communicating and Planning for Instruction; Chapter 8: Technology Content, Process and Standards; Chapter 9: Curriculum and Instructional Design |
| Assignment Reminder | *#1 – Procedure, Safety and Information Sheets – due on Monday, Nov. 23* |
| Topic | Reflection, Deliberation and Change (Sept. 28) |
| Guiding Questions | • What is reflective practice?<br>• How can deliberation be used to assess one's teaching the curriculum, and considerations for pedagogical change? |
| Readings | 1. Petrina, S. (2007). *Advanced teaching methods for the technology classroom.* Hershey, PA: Information Science Publishing. Ch. 1 – p. 14-24: Projection and Reflective Practice; Page 9: Feedback; Page 10: Reflection; Page 88: (Chapter 3-Feelings, Values, Ethics & Skills) Projection and Reflective Practice; Page 108: Research Methods |
| | |

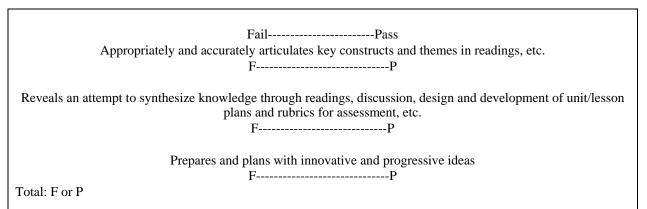| Unit 2: Week 4, 5, 6, 7, & 8: Planning, Learning, Curriculum & Pedagogy | |
|---|---|
| Topic | Indigeneity, Technology, Ecology, and Ethical Education with 21st Century Teaching and Learning (Sept. 30) |
| Guiding Questions | • What is the role of a teacher in a gendered dominant class?<br>• What is ethical education in a diverse classroom with Indigenous and non-Indigenous students? What is the goal of education?<br>• What is Indigeneity? |
| | 1. Petrina, S. (2007). *Advanced teaching methods for the technology classroom.* Hershey, PA: Information Science Publishing. Page 9: Feedback; Page 10: Reflection; Page 88: (Chapter 3-Feelings, Values, Ethics & Skills) Projection and Reflective Practice; Page 108: Research Methods |
| Topic | Indigeneity, Technology, Ecology, and Ethical Education with 21st Century Teaching and Learning (Oct. 5) |
| | • How do you organize instruction towards making meaning, meaning relevant to you as the teacher and your students? |

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|---|---|
| | 1. Petrina, S. (2007). *Advanced teaching methods for the technology classroom.* Hershey, PA: Information Science Publishing. Chapters 5, 6, 9 |
| | 2. Laird, Charles. (Dir.). (2004). *Through These Eyes* [documentary]. 55 min. Montréal: National Film Board of Canada. http://www.nfb.ca/film/through_these_eyes/ |
| | 3. Kaetsu, Noboru. (Dir.). (2003/2004). *Children Full of Life* [documentary]. 45 min.; Japan Broadcasting Corporation (NHK). Toronto: CBC Educational Sales.<br>http://www.youtube.com/watch?v=1tLB1lU-H0M |
| **Topic** | **Planning, Learning, Curriculum & Pedagogy** (Oct. 7) |
| Guiding Questions | • How can characteristics of creativity, design and problem-solving be infused in the curriculum? |
| Readings | 1. Petrina, S. (2007). *Advanced teaching methods for the technology classroom.* Hershey, PA: Information Science Publishing. Chapter 5: Creativity, Ingenuity, Design and Problem-Solving |
| Assignment Reminder | *#1 – Procedure, Safety and Information Sheets – **due on Monday, Nov. 23*** |

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| **Monday, October 13, 2014: UBC Closed to observe Thanksgiving** |

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| Activity | Field Trip (Oct. 14)<br>• Selected guided tour of the Museum of Anthropology with curators from the museum.<br>Focus on Indigeneity, history of design, technology, commerce, global thinking, and education. |

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|---|---|
| Topic | Classroom Management, Classroom Climate (Oct. 19, 21) |
| Guiding Questions | • What is management? How can you create a good classroom climate?<br>• Why is classroom management important?<br>• How can safety be woven into the fabric of curriculum?<br>• Why are values important?<br>• Whose values are important? |
| Readings | Petrina, S. (2007). *Advanced teaching methods for the technology classroom.* Hershey, PA: Information Science Publishing. Chapters 11: Classroom Management, Facilities Design and Safety |

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| **Unit 3: Week 9 & 10: Practicum Experience: November 2 to November 13, 2015** |

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| **Unit 4: Week 11 & 12: Practicum Reflection & Discussion: Teaching Practices continued** |

| | |
|---|---|
| Topic | Practicum Reflection and Discussion |
| Monday, Nov. 16 | TBA Guest Speaker: --- |
| Assignment DUE | *#1 – Procedure, Safety and Information Sheets – **due on Monday, Nov. 23***<br><br>Continue working on Practicum Unit Plan assignment (due Monday, Dec. 7) |

| Unit 5: Week 13, 14, & 15: Assessment & Evaluation | |
|---|---|
| Topic | Assessment & Evaluation<br>Gathering evidence of learning (Nov. 30, Dec. 2, 7, 9, 14 and 16) |
| Guiding Questions | • What are some of the formative and summative assessment strategies that can be used to assess student learning and evaluative course work?<br>• How can teachers use criterion-reference evaluation to assess student's performance which compares established criteria rather than to the performance of other students? |
| | • Petrina, S. (2007). *Advanced teaching methods for the technology classroom.* Hershey, PA: Information Science Publishing. Chapter 10: Assessment and Evaluation |
| | |
| Assignment DUE | #2 Practicum Unit Plan (include Procedure, Safety and Information sheets from assignment #1).<br>**Due on Monday, December 7.** |

## PARTICIPATION

Participation is interdependent with **preparation** for each class, which involves *reading* (highlighting, pagination post-its, margin notes, comments & questions, etc.), *writing* and *speaking* (discussing, corresponding with peers, chat, etc.). *Activities* also are expected to be completed and presented on their due dates; presentations and assignments should be polished, creative, and informative.
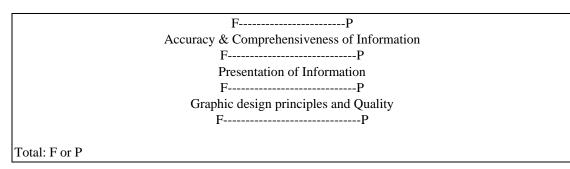
**Participation**

Fail-----------------------Pass
Appropriately and accurately articulates key constructs and themes in readings, etc.
F-----------------------------P

Reveals an attempt to synthesize knowledge through readings, discussion, design and development of unit/lesson plans and rubrics for assessment, etc.
F----------------------------P

Prepares and plans with innovative and progressive ideas
F----------------------------P

Total: F or P

## ASSIGNMENTS

1. **Procedure, Safety and Information Sheets:** Procedure, Safety and Information sheets are standard curriculum documents for teaching in labs and Lab/Workshops. Prepare one set (Procedure + Safety + Information) for a **specific activity** related to your practicum unit plan. Choose an apparatus, software, tool, material, machine or process that you know you will be teaching as part of your practicum unit plan and this document will be included within your unit plan. This is an opportunity for you to demonstrate your expertise in desktop publishing (DTP) and to transfer your design skills to a graphic design medium. Elements and principles of design are crucial **(Chapters 2 and 11).** **Due: Monday, November 23**

   *Length: Material for Procedures to use the apparatus, etc; Safety information; Information on the apparatus as for example the machine parts = 1-2 pages for each (include in Practicum Unit Plan

**Procedure, Safety & Information Sheets**

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                        F-----------------------P
             Accuracy & Comprehensiveness of Information
                        F----------------------------P
                     Presentation of Information
                        F----------------------------P
                Graphic design principles and Quality
                        F----------------------------P

Total: F or P
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2. **Practicum Unit Plan:** Develop a technology education, TIDE or STEM unit plan that conforms to the Ministry's *Board/Authority Authorized Courses: Requirements and Procedures* and the BAA course framework. Present work to the class. **Due: Monday, December 7**

   **Format:** Use the format provided in the Ministry's *Board/Authority Authorized Courses: Requirements and Procedures* (see example given). Download template from http://www.bced.gov.bc.ca/graduation/board_authority_courses.htm

**Practicum Unit Plan**

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                    Fail-----------------------Pass
  Introduction, Synopsis & Rationale (Relevance to Technology Education & Students) F----
                          ------------------------P

                  Organizational Structure (Comprehensiveness) F-
                          ----------------------------P

     Unit Topic & Descriptions  + Learning Outcomes (Articulation w/ IRPs, Creativity,
                        Relevance & Comprehensiveness)
                          F----------------------------P

        Instructional & Assessment Components + Learning Resources (Currency &
                                Relevance)
                          F------------------------------P

                            Grammar & Format
                          F------------------------------P

Total: F or P
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