Faculty of Education
The University of Western Ontario
B.Ed. Course Outline

Curriculum & Pedagogy in Elementary Science & Technology J/I
EDUC 5178
Section 010; Course Number 19414
Fall/Winter 2016/2017
Thursdays 2:30 pm – 4:30 pm
Room 2051

Instructor: Dr. Anton Puvirajah
Email: apuvira@uwo.ca; Telephone: 519-661-2111, ext. 87354
Office: Rm 1030; Office Hours: Thursdays @ 1:30 pm or by appointment

Calendar Copy: Approaches to and strategies for the teaching of science in the elementary school grades. Course content focuses on curricula and pedagogies that are true to the nature of science, consistent with desired educational aims, and appropriate for young learners. Two hours per week, full year, .5 credit

Course Description: In this course teacher candidates will develop an understanding of the principles underlying the teaching of science and technology in the Primary and Junior Divisions. Through hands-on activities participants will practice the skills of inquiry and technological design. Candidates will have an opportunity to examine and challenge their assumptions about the nature of science and technology and what it means to teach in ways that are both meaningful and relevant. Emphasis will be placed on a framework for science and technology, which includes the principles of inquiry and technological problem-solving activities, teaching practices that link science and technology to society and the environment (STSE), and to other areas of the curricula. Integral to the course is the objective to help teacher candidates develop their commitment to students and student learning; further professional knowledge through ongoing professional learning; and the application of professional knowledge to professional practice and leadership in learning communities.
Learning Outcomes:

This course will provide a variety of learning opportunities provided via whole group, small group, and individual experiences. Each participant is asked to assume responsibility for their personal learning and to reflect on their experiences in terms of meeting both personal and educational goals. This course will focus on the continuing process of becoming an effective educator through the refinement of program planning skills and instructional practice in the areas of science and technology. The experiences in this course, will lead to a series of learning outcomes for teacher candidates:

<table>
<thead>
<tr>
<th>Course Activity</th>
<th>Knowledge Outcome</th>
<th>Performance Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the course, students will:</td>
<td>so that at the end of the course they will know and understand</td>
<td>and be able to:</td>
</tr>
<tr>
<td>develop a lesson plan based on a prescribed template;</td>
<td>the components of a lesson plan</td>
<td>plan a complete lesson containing all appropriate components and relevant information, (assessment)</td>
</tr>
<tr>
<td>design a resource that enhances student engagement and contribute to conceptual understanding;</td>
<td>how resources increase teacher efficacy and student comprehension;</td>
<td>Design, use, demo and implement a resource tool for teaching a scientific concept;</td>
</tr>
<tr>
<td>Use a web 2.0 technology to provide student-centered engagement with ICT's</td>
<td>how to develop a student centred discussion board or blog to share knowledge;</td>
<td>Comfortably navigate between ICT's and web 2.0 interfaces and disseminate knowledge, and contribute to social communities;</td>
</tr>
<tr>
<td>read a series of Science Education articles</td>
<td>current scholarship and research on theoretical and practical discussions of Science Education</td>
<td>Engage in thoughtful and critical discussions on pedagogy</td>
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</tbody>
</table>

By the end of the course, students should be able to demonstrate performance of these outcomes:

Demonstration of Performance Outcomes

| Students will demonstrate these outcomes through successful completion of the following activities and assignments: |
|develop lesson plans based on a prescribed template|
|design a learning resource|
|navigate a student-centered interactive web interface|
|engage in thoughtful and critical discussions on pedagogy|

Course Content:

This course will focus on:

- Clear understanding of inquiry and constructivism as a pedagogical approach to science and technology;
- Critical examination of science resources and activities with respect to inquiry;
- Familiarity with the requirements of the Ontario curricula in Science and Technology;
- Understanding of the teacher's role in science/technology instruction; and
• Enhanced interest in the discipline of science/technology as well as increased confidence in teaching elementary science/technology.

The big picture includes an understanding that:

• *Inquiry* based practices impacts the learning process of children;
• *Constructivist* based approaches tap into prior knowledge and validate the learner;
• *Transferable Skills* are the key to creating productive members of society;
• *Inequitable practices* are embedded in public education, it is our role to convey an anti-racist curriculum;
• Effective learning resources and teaching-learning strategies support learning;
• Professional growth occurs through active participation, inquiry, collaboration and reflection;
• Integration and consolidation of theory, knowledge and skills improves personal practice.

**Course Materials:**

There is no required textbook for this course.

**ALL REQUIRED READINGS WILL BE POSTED ON OWL (owl.uwo.ca)**

When required, please complete your readings before coming to class. You will be expected to discuss your readings and reflect on them.

**Course Resources**


**Assignments:**

The course assignments are designed to support the candidates' growth and development as a teacher. They are opportunities for the participants to show improvement in their skills and to sustain continued improvement in their personal practice.

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Grade Value (%)</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Reading Conference</td>
<td>5</td>
<td>Oct 6th 2016</td>
</tr>
<tr>
<td>2 Lesson Deconstruction</td>
<td>35</td>
<td>Oct 27th &amp; Nov 3rd 2016</td>
</tr>
<tr>
<td>3 Creativity in Science</td>
<td>40</td>
<td>Feb 9th 2017</td>
</tr>
<tr>
<td>4 Hook Sharing via Online Community Board</td>
<td>10</td>
<td>March 2nd 2017</td>
</tr>
<tr>
<td>5 Professionalism</td>
<td>10</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
**Policy Statements:**

**Accessibility:** The University of Western Ontario is committed to recognizing the dignity and independence of all students and seeks to ensure that persons with disabilities have genuine, open and unhindered access to academic services. Please contact the course instructor if you require course materials in an alternative format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for information about requesting academic accommodation, or go to the following website: [http://www.edu.uwo.ca/programs/preservice-education/documents/policies/Accessibility_Western.pdf](http://www.edu.uwo.ca/programs/preservice-education/documents/policies/Accessibility_Western.pdf)

**ATTENDANCE:** The B.Ed. program is an intense and demanding programs of professional preparation. You are expected to demonstrate high levels of both academic and professional integrity. Such integrity is demonstrated in part by your commitment to and attendance at all classes, workshops, tutorials, and practicum activities. Read more about the Faculty’s attendance policy on-line: [http://www.edu.uwo.ca/programs/preservice-education/Attendance%20Policy%202016.pdf](http://www.edu.uwo.ca/programs/preservice-education/Attendance%20Policy%202016.pdf)

**EXCUSED ABSENCES:** If you are ill, require compassionate leave, or must miss classes for religious observance, your absence is excused; you will not be penalized but you are responsible for work missed.

**UNEXCUSED ABSENCES:** Any absence that is not a result of illness, bereavement, or religious observance is an unexcused absence. Three unexcused absences will result in you being referred to the Associate Dean and placed on academic probation. Any further unexcused absence will result in failure of the course and withdrawal from the program.

**Language Proficiency:** In accordance with regulations established by the Senate of the University, you must demonstrate the ability to write clearly and correctly. Work which lacks proficiency in the language of instruction is unacceptable for academic credit, and will either be failed or, at the discretion of the instructor, returned to you for revision to an acceptable level.

**Late Penalties:** Normally, the only acceptable reasons for late or missed assignments are illness (which you must report to the Teacher Education Office) or extreme compassionate circumstances. Unexcused late assignments will be penalized at a rate of 5% per day, and will not be accepted more than 5 days after the due date unless prior arrangements have been made with the instructor.

**Academic Offences:** Scholastic offences are taken very seriously in this professional Faculty. You are, after all, going to be a teacher. Read about what constitutes a Scholastic Offence at the following Web site: [http://www.edu.uwo.ca/programs/preservice-education/documents/policies/WEB_ScholasticDiscipline.pdf](http://www.edu.uwo.ca/programs/preservice-education/documents/policies/WEB_ScholasticDiscipline.pdf)

**Plagiarism:** Plagiarism means presenting someone else’s words or ideas as your own. The concept applies to all assignments, including lesson and unit plans, laboratory reports, diagrams, and computer projects. For further information, consult your instructors, the Associate Dean’s Office, and current style manuals. Advice about plagiarism and how to avoid it can also be found here: [http://www.edu.uwo.ca/programs/preservice-education/documents/policies/WEB_PlagiarismPolicy.pdf](http://www.edu.uwo.ca/programs/preservice-education/documents/policies/WEB_PlagiarismPolicy.pdf)

**Plagiarism-Checking:**

a. All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com ([http://www.turnitin.com](http://www.turnitin.com))
**Use of Laptops & Notebooks in Class:** As a courtesy to members of the class, please put your cell phone on ‘vibrate’ or turn it off during class. Laptop and other electronic devices may be used in a professional manner to facilitate your activities in the course, but out of courtesy to colleagues and the instructor, please do not engage in personal networking and non-course communication during class time – save it for before or after class, or for the break.

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**SUPPORT SERVICES**

A variety of support services are available at Western. If you need advice or assistance, do not hesitate to get in touch with any of these services.

**FINANCIAL ASSISTANCE:** Registrarial Services ([http://www.registrar.uwo.ca](http://www.registrar.uwo.ca))

**WRITING SUPPORT:** Student Development Centre ([http://www.sdc.uwo.ca/](http://www.sdc.uwo.ca/))

**LEARNING SKILLS SUPPORT:** Student Development Centre ([http://www.sdc.uwo.ca/](http://www.sdc.uwo.ca/))

**INTERNATIONAL STUDENTS:** Student Development Centre ([http://www.sdc.uwo.ca/](http://www.sdc.uwo.ca/))

**ABORIGINAL STUDENTS:** Student Development Centre ([http://www.sdc.uwo.ca/](http://www.sdc.uwo.ca/))

**STUDENTS with DISABILITIES:** Student Development Centre ([http://www.sdc.uwo.ca/](http://www.sdc.uwo.ca/))

**SOCIAL & CULTURAL ISSUES:** University Students’ Council ([http://westernusc.ca/services/](http://westernusc.ca/services/))

**EMOTIONAL or MENTAL DISTRESS:** Students who are in emotional or mental distress should refer to Mental Health @ Western ([http://www.uwo.ca/uwocom/mentalhealth/](http://www.uwo.ca/uwocom/mentalhealth/)) for a complete list of options about how to obtain help.

**B.Ed./Dip.Ed. PROGRAM ISSUES:** zuber@uwo.ca, Teacher Education Office, room 1166

**NEED HELP but not sure what to do:** zuber@uwo.ca, Teacher Education Office, room 1166