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**Course Outline**

**EDUC 5126 – *Assessment in Science***

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**Department of Education Mission Statement**

The Department of Education at Cape Breton University is committed to preparing teachers for their responsibilities as educators in both local and global contexts. To achieve this, we provide programs in both pre-service and continuing teacher education that emphasize disciplined professional inquiry while reflecting the best classroom practice and the results of current research on teaching and learning. The Department of Education is dedicated to preparing teachers, who will be knowledgeable, skillful, flexible, caring pedagogues and responsible members of the profession.

**A Core Focus on Education for Sustainability (EfS)**

A core focus for the Education programs at Cape Breton University is Education for Sustainability (EfS). Our vision of EfS is inclusive of the three realms of sustainability – environment, society and economy and addresses content, context, pedagogy, global issues and local priorities. Teachers and teacher candidates will engage in learning designed to cultivate, critical thinking, creativity, knowledge, and skills to actively address challenges with sustainable solutions. EfS supports the values of interdependence, empathy, equity, personal responsibility, social justice and holistic perspectives required to participate in society and to live sustainably and well.

**Course Overview**

Education 5126 is an introduction to the theory and practice of student assessment in science education. The course is designed to provide teachers with an understanding of the major underlying issues surrounding assessment one being assessed to the assessor. This course will examine some of the emerging trends in assessing student progress and achievement in the science classroom. Participants will design, develop, and implement authentic assessment strategies in their own classrooms. Emphasis will be placed on performance based assessment and evaluation of the dimensions of scientific literacy. The teacher-students will be required to provide critical reflection on the theory-into-practice activities, supporting their online dialogue with current research on student evaluation practices.

**Course Objectives**

This course is required for all teachers enrolled in the Certificate in Science Education program. The core courses in the Certificate in Science program, including EDUC 5126, allow students to meet the certification requirements for the Nova Scotia Department of Education.

On completion of this course students will demonstrate the following:

* An understanding of the changing role of assessment in the curriculum as the purposeful support of learning for all students
* An understanding that assessment for learning should be balanced and flexible including oral, performance and written tasks and is tied directly to science learning outcomes
* An understanding that in order for assessment to be helpful to students it must inform them what they have done well, what that have been challenged by, what they need to do to improve.
* An ability to draw upon a broad range of appropriate science classroom assessment strategies help students achieve the goals of inquiry based science education
* An ability to design assessment instruments for performance tasks, oral tasks and written tasks
* Understand the relationships between assessment, curriculum content and pedagogy as they relate to inquiry-based science education (IBSE)
* Understand the connection between IBSE, deep learning and Education for Sustainability
* An ability to design quality assessment tools (formative and summative) and to develop and use rubrics and other tools effectively
* To understand the role of pedagogical and professional judgment in grading and communicating about student learning
* To understand that schools, departments, and schools boards have specific policies to guide assessment across the grade levels

Required Texts

Harlen, W. (2013). *Assessment & Inquiry-Based Science Education: Issues in Policy and Practice*. Global Network of Science Academies. (Available on Moodle)

Required and supplemental readings will be made available through the course Moodle site for access and downloading, if preferred.

There will also be opportunities to examine assessment documents published by the Nova Scotia Department of Education.

<http://www.ednet.ns.ca/index.php?t=sub_pages&cat=17>

(Many of the documents on the Nova Scotia Education website are available by mail free of charge or may be downloaded for free- other documents are available on EdNet and are accessed with the teacher’s EdNet password.

## ****SCHEDULE OF COURSE LEARNING MODULES & READINGS****

Course topics and related chapters in the course text are indicated on the schedule below.

**Note: A detailed explanation of all course requirements will be given in class.**

1. **Professionalism & Contributions**

**Due Date: Ongoing**

Students actively participate in whole and/or small group tasks and Moodle discussions as required. This requires that all required readings, informed by evidence of supplemental readings/viewings for each module are done and that students are prepared to discuss and apply this material.

**Your Task:**

* Actively participating in whole and small group performative tasks and discussions
* Completing all assigned readings each week and the activities and being prepared to work collaboratively in small groups
* Conducting yourself as a professional by informing the instructor prior to unavoidable absences or issues with due dates for assignments
* Professionally communicating questions, concerns, and required needs to the instructor
* Checking emails; ensuring required work is posted and received by the instructor via email or Moodle
* Submitting work samples digitally for sharing; participating in MOODLE activities and discussion forums

<http://courseware.cbu.ca/moodle/>

1. **Learning Modules**

**Module 1: Re-visioning Assessment – Assessment to Support Science Learning**

**3 weeks: January 6th – 24th**

Required Readings:

Damian Cooper (2007): Chapter 1: The Big Ideas of Assessment

Damian Cooper (2007): Chapter 2: Different Purposes for Assessing Student Work

Learning Tasks:

Assessment Anecdotes

Case Study: Key Assessment Terms

Reading Comprehension Check

**Module 2: Assessing Science: Inquiry Based Science Education**

**2 weeks: January 25th – February 7th**

Required Readings:

Wynne Harlen (2013). Chapter 2: Inquiry-based science education: Rationale and goals

Wynne Harlen (2013). Chapter 4: Assessment, pedagogy and curriculum

Learning Task: Discussion Forum

Learning Task: Mythbusters and Inquiry - Based Learning

**Module 3: Assessing the Targets: Outcomes, Indicators, Standards and Expectations**

**2 weeks: February 8th - February 21st**

Required Reading:

Rick Stiggins et al. (2006). Chapter 3: Assess what? Clear Targets

Nova Scotia Science Curriculum documents

Learning task: Group Project Wiki - Deconstructing Science Learning Outcomes

**Module 4: Assessment Methods: Designing High Quality Assessment Strategies and Tools 3 weeks: February 22nd – March 13th**

Required Reading:

Rick Stiggins et al. (2006): Chapter 4: Assess How? Designing Assessments to Do What *You* Want?

Wynne Harlen (2013): Chapter 5: Implementing formative assessment of IBSE

Damian Cooper (2007). Chapter 5: Who’s the Assessor? Teacher, Peer and Self -assessment

Damian Cooper (2007). Chapter 6: Classroom Assessment Strategies

Learning task: Designing Assessment for Science Outcomes

Discussion Forum: Formative Assessment Practices

**Module 5: Performance Assessment and Issues in Assessing Inquiry Based Learning**

**weeks: March 14th – 21st (March Break) March 22nd - 27th - 1 week**

Damian Cooper (2007) Chapter 7: Performance Assessment

Learning Task: Designing Performance Based Assessment

**Module 6: Assessment Reform: Challenges and Opportunities   
2 weeks: March 28th – April 6th**

Learning Task: Final Course Seminar

**Evaluation:**

**1. Professionalism and Contributions: 10**

**2. Learning Module 1:**

**Key Terms and Case Study 5**

**Assessment Anecdote 10**

**3. Learning Module 2:**

**Understanding IBSE- Mythbusters Activity 15**

**4. Module 3:**

**Group Wiki: Deconstructing Science Learning Outcomes 15**

**5. Module 4:**

**Designing Assessment for Science 20**

**6. Module 5:**

**Designing a High Quality Performance Based Assessment 15**

**7. Module 6: Assessment Reform: Challenges and Opportunities**

**Final Seminar 10**

**Note:**

Students are responsible for any missed materials and when acceptable documentation is received a mutually acceptable alternate arrangement for evaluation will be made. Penalties may be incurred unless alternate arrangements are made prior to the absence or missing and late assignments. It is a student’s responsibility to confirm that all assignments etc submitted electronically to the instructor were actually received by the instructor.

***A Note on Grades***

*CBU requires a numerical grade out of 100 to be submitted for each student at the end of the course. Grades in the range of 90-100 indicate work that is of exceptional quality that represents achievement that is quite rare; all course outcomes are met and exceeded. Grades in the range of 80-89 reflect a level of achievement that is excellent and indicate a high degree of sustained effort and a demonstration of mastering most course content and skills. A grade in the 70 -79 range communicates a good effort with many course concepts and skills being mastered and an acceptable quality of course work being produced. A 60 -69 grade range is reserved for satisfactory work with most core course outcomes being met. Grades in the 50 -59 range indicate a limited demonstration of understanding of core course outcomes, while grades below 50 communicate that the core course outcomes have not been met by the student.*

**Code of Student Behaviour:**

All students should read carefully the section in the University calendar pertaining to “Ethical Behaviour in Academic Matters”. This information can be found at: <http://www.cbu.ca/cbu/Calendar/Calendar_2007_2009/pdfs/calendar_07-09.pdf>

As students and professionals you are expected to demonstrate sensitivity for and adherences to the norms of respectful, polite and professional conduct, especially as it relates to online learning environments.