

# SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



## COURSE OUTLINE

**COURSE TITLE:** CONSTRUCTION BASICS

**CODE NO. :** CTT 140                      **SEMESTER:** II

**PROGRAM:** PRE-TRADES AND TECHNOLOGY

**AUTHOR:** S. IENCO & B. SPARROW

**DATE:** Jan-08              **PREVIOUS OUTLINE DATED:** Jan-07

**APPROVED:**

|                                   | CHAIR                         | DATE |
|-----------------------------------|-------------------------------|------|
| <b>TOTAL CREDITS:</b> 3           |                               |      |
| <b>PREREQUISITE(S):</b> NONE      |                               |      |
| <b>LENGTH OF COURSE:</b> 16 WEEKS | <b>TOTAL CREDIT HOURS:</b> 48 |      |

**Copyright ©2007 The Sault College of Applied Arts & Technology**  
*Reproduction of this document by any means, in whole or in part, without prior written permission of Sault College of Applied Arts & Technology is prohibited.*  
*For additional information, please contact Corey Meunier, Chair*  
*School of the Natural Environment, Technology and Skilled Trades*  
*(705) 759-2554, Ext. 2610*

**I. COURSE DESCRIPTION:**

This course is intended to introduce the student to various activities commonly undertaken in construction and related engineering disciplines. The student will gain understanding in the use of materials, procedures, techniques, tools and equipment commonly encountered in construction engineering projects.

Construction is one of the leading industries in Ontario. It takes teamwork to be successful in this profession. This course introduces you to some of the key skills for success in this field. These skills include AutoCAD, scheduling, scaffolding, concrete testing, surveying, estimating and a team project. Field trips make up the other component of this course.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

Upon successful completion of this course, the student will demonstrate the ability to:

1. Use CAD to create and plot a basic drawing

Potential Elements of the Performance:

- Recognize the hardware and software required for CAD
- Understand the use and value of precision in CAD for engineering and construction
- Use CAD to extract information from a drawing

Develop 2D and 3D CAD models by completing a tutorial

2. Use Microsoft Project to create a network diagram

Potential Elements of the Performance:

- Create a task list for a small project
- Identify task relationships and their effect on project duration
- Define a critical activity
- Create a network diagram and identify the critical path using Microsoft Project

3. Describe methods and procedures required for scaffold erection and dismantling.

Potential Elements of the Performance:

- list required personal protective equipment
- interpret related occupational health and safety legislation
- interpret material list requirements
- identify scaffolding system and components

Potential Elements of the Performance Continued:

- describe pre-installation inspection procedures for scaffolding system and components
  - describe area layout procedures for scaffold base
  - describe surveying methods in relation to scaffold base
  - describe the procedures to check alignment during installation
  - identify hand and power tools used in the erection and dismantlement of scaffolds
  - demonstrate basic installation procedures for scaffolding systems
4. Describe the methods and procedures required for selecting and mixing concrete ingredients and testing for slump and strength.  
Potential Elements of the Performance:
- Identify various types of cement and describe their use
  - Identify types and sizes of concrete aggregates
  - Identify types of concrete admixtures and describe their uses
  - Identify concrete curing methods and materials
  - Identify concrete testing methods
  - demonstrate sampling methods used for testing of concrete
  - perform slump testing of concrete
  - perform casting of specimens for strength testing of concrete
  - perform a compressive strength test on concrete cylinder
5. Describe the use of survey measurement devices for construction  
Potential Elements of the Performance:
- Identify surveying equipment, including: tripod, level, transit, laser level
  - interpret the use of a tripod, level and rod
  - define the term bench mark, back sight, foresight and height of instrument
  - illustrate the set up of a level on a tripod
  - illustrate the use of the instrument in calculating levels and heights
  - describe the use of grade through the use of a bench mark.
6. Understand the use of Estimating in construction  
Potential Elements of the Performance:
- Identify different types of estimates
  - Recognize the different construction divisions
  - Prepare an estimate of quantities for earthwork using the average elevation method with Microsoft Excel
  - Prepare an estimate of concrete volume given a construction drawing

7. Working in groups of three students construct a scaled concrete shell dome used to protect an egg. Adapted from “ACI Egg Protection Device Competition.”

Potential Elements of the Performance:

- plan the project
- estimate cost and materials required
- schedule time required for completion
- assign tasks for each group member
- construct the concrete dome

8. Participate and write a brief report on your field trips

Potential Elements of the Performance:

- record and report project visited, architect/engineer/constructor responsible for project
- record and report names of personnel guiding you around the project
- report and record if a health and safety plan is in place
- report and record if project is on schedule or is delayed
- report and record how many subcontractors are on site
- take several digital photographs of the work site
- report and record any work underway
- submit a brief report including all of the above components

### **III. TOPICS:**

1. CAD
2. Scheduling - Microsoft Project
3. Scaffolding
4. Portland Cement Concrete
5. Leveling
6. Estimating
7. Independent Group Project
8. Field Trips

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

- None
- WebCT Handouts

**V.****EVALUATION PROCESS/GRADING SYSTEM:**

You will be assigned a final grade based on successful completion of quizzes, assignments, project and field trips, weighted as follows:

|              |             |
|--------------|-------------|
| Quizzes      | 30%         |
| Assignments  | 35%         |
| Field Trips  | 20%         |
| Project      | <u>15%</u>  |
| <b>TOTAL</b> | <b>100%</b> |

Each quiz carries equal weight. They are surprise quizzes given in a random fashion during class hours. The content of each quiz is relevant to one or two week's stretch of lectures. You are not permitted to write a missed quiz unless you present the instructor with a written letter explaining the extenuating circumstance why you were unable to write the quiz.

Each assignment carries equal weight. Late submittals receive only a maximum grade of 50%. However, laboratories handed in later than one week will receive a grade of 0%.

The following semester grades will be assigned to students:

| <u>Grade</u> | <u>Definition</u>                                                                                                                                  | <u>Grade Point Equivalent</u> |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| A+           | 90 - 100%                                                                                                                                          | 4.00                          |
| A            | 80 - 89%                                                                                                                                           | 4.00                          |
| B            | 70 - 79%                                                                                                                                           | 3.00                          |
| C            | 60 - 69%                                                                                                                                           | 2.00                          |
| D            | 50 – 59%                                                                                                                                           | 1.00                          |
| F (Fail)     | 49% or below                                                                                                                                       | 0.00                          |
| CR (Credit)  | Credit for diploma requirements has been awarded.                                                                                                  |                               |
| S            | Satisfactory achievement in field placement or non-graded subject areas.                                                                           |                               |
| U            | Unsatisfactory achievement in field placement or non-graded subject areas.                                                                         |                               |
| X            | A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course. |                               |
| NR           | Grade not reported to Registrar's office.                                                                                                          |                               |
| W            | Student has withdrawn from the course without academic penalty.                                                                                    |                               |

## VI. SPECIAL NOTES:

### Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

### Retention of course outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

**VII. ACADEMIC / CLASSROOM CONDUCT**

Introduction: Sault College students, faculty members, employees and Ray Lawson Hall Residents constitute an academic community committed to training and education that will enhance effectiveness in the workplace and quality of life. The College community expects all members to discipline themselves, individually and collectively, and it requires adherence to the standards of conduct appropriate for an academic community.

Sault College considers its students adults and as such obligated to make responsible decisions. The Student Code of Conduct exists to assist in the effort of providing the best possible learning and living environment for all students. It is the obligation of students to treat all other members of the academic community with dignity and respect – including other students, faculty members, employees, visitors and neighbours of the College. The enforcement of the Student Code of Conduct is critical to the existence of such an environment for all members of the academic community. Ignorance of the rules or of the law is not a defence against disciplinary action. The College reserves all rights to criminal action where it deems necessary. Lack of intention to violate College policy will not generally excuse an infraction.

**Academic Dishonesty:**

Students shall submit written or other work in a course that shall be the product of their own efforts. "Academic Dishonesty" includes, but is not limited to, the following:

- a. Copying from another student's paper.
- b. Using material not authorized by the person administering the test or assignment.
- c. Collaborating with another student during a test without permission.
- d. Plagiarism (i.e. representing the work of another, as one's own, inclusive of purchases of a commercial nature).
- e. Collusion (i.e. obtaining from or giving to another student unauthorized assistance in course work).
- f. Falsification (i.e. modification, without authorization, of any examination paper, record, assignment, or report).
- g. Knowingly using, buying, selling, stealing, or soliciting contents of a test, examination paper, record, assignment, or report.

Academic Dishonesty Continued:

- h. Representing oneself as another student for the purpose of taking a test or examination or allowing oneself to be represented by another for the same
- i. Attempting to bribe or otherwise coerce a professor/instructor to obtain favours.
- j. Cheating (i.e. any misrepresentation by a student of their performance in a College subject for the purpose of obtaining credit to which they are not entitled).
- k. Any act designated by the President or his/her designate.

(Student Code of Conduct – Article 2, Section 2)

Communication:

The College considers WebCT/LMS as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the Learning Management System communication tool.

Attendance:

Students are expected to attend 100% of their classes. Attendance will be recorded within the first 15 minutes of each class.

Leaving or Entering During Class:

Students should exercise respect for faculty and students when leaving or entering a class that is already in session. Leaving or entering should be done with a minimal amount of interruption.

Disruption:

Students shall not obstruct or disrupt, or attempt to obstruct or disrupt, teaching, administration, disciplinary procedures, or other College activities.

(Student Code of Conduct – Article 2, Section 9)

Use of Electronic Devices:

*General:* Taking photos or making audio/video recordings on Sault College property without permission in ANY context in which the person being photographed or recorded has a reasonable expectation of privacy is prohibited. Examples include but are not limited to:

*Classrooms:* The use of cell phones, photographically capable cell phones, pagers and other communication/electronic devices during classes, clinical or field placement is prohibited unless authorized by faculty.

Use of Electronic Devices Continued:

*Examinations:* The use of cell phones, photographically capable cell phones, pagers and other communication/electronic devices during exams and midterms is prohibited unless authorized by faculty in charge.

(Student Code of Conduct – Article 2, Section 31)

**SANCTIONS**

College staff may impose sanctions in accordance with their responsibilities. Sanctions, which are imposed, may become part of the student's official record and are removed one year and one term after the student's last academic activity at Sault College.

The College shall make sanctions concerning students' actions and offences occurring within or affecting people on Sault College owned or controlled property, including but not limited to Ray Lawson Hall Residence, Sault College Aviation Hangar, off-campus at a College-sponsored event, or when such actions or offences at a non-College event off-campus have a direct impact on students' on-campus. The College reserves the right to assess any sanction it may deem appropriate. A serious breach or continuation or a repetition of behaviour in violation of the Student Code of Conduct will be cause for further sanctions up to and including expulsion.

**Sanctions for Academic Dishonesty may include the following:**

1. A professor/instructor may assign a sanction as defined below, or make recommendations to the Dean for disposition of the matter.  
The professor/instructor may:
  - issue a verbal reprimand
  - make an assignment of a lower grade with explanation
  - require additional Academic assignments and issue a lower grade upon completion, to the maximum grade "C"
  - make an automatic assignment of a failing grade
  - recommend to the Dean, dismissal from the course with the assignment of a failing grade recommend to the Dean, dismissal from the College for a definite or indefinite period of time with a failing grade.

**Sanctions for Academic Dishonesty may include the following Continued:**

2. If the student denies the allegation of academic dishonesty the student should discuss the matter with the Director of Student Services immediately. If the matter cannot be resolved the student should file an Academic Appeal within three (3) working days. The appeal would automatically move to Step Two – Academic Appeal.

(Student Code of Conduct – Article 4)

**Testing Absence**

If a student is unable to write a test for medical reasons on the date assigned, the following procedure is required:

- In the event of an emergency on the day of a test, the student must telephone the College to identify the absence. The college has a 24-hour electronic voice mail system (759-2554) Ext. 2600. Documentation may be required to support the absence.
- The student shall provide the Professor with advance notice preferably in writing or e-mail of his/her need to miss the test.
- The student may be required to document the absence at the discretion of the Professor.
- All decisions regarding whether tests shall be re-scheduled will be at the discretion of the Professor.
- The student is responsible to make arrangements, immediately upon their return to the College with their course Professor in order to make-up the missed test prior to the next scheduled class for the course in question.

**VIII. PRIOR LEARNING ASSESSMENT:**

Students who wish to apply for advanced credit in the course should consult with the professor and the college's academic counsellors. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

**IX. DIRECT CREDIT TRANSFERS:**

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.