

I. COURSE DESCRIPTION:

This course introduces the student to the fundamental principles of construction estimating. The topics covered will deal with the measurement of construction work, reading construction documents (prints and specifications) as well as records management. Emphasis is placed on estimating site work, concrete, masonry, steel and wood, using detailed and systematic methods. Computer-based spreadsheets will be used to prepare estimates and assignments. Students will learn to assemble and sort estimate information for a complex project in a logical and manageable manner and develop organizational and time management skills. Students will also become familiar with issues relating to construction waste management and reduction as well as environmental controls as it relates to construction estimating.

II. LEARNING OUTCOMES:

1. Communicate information effectively and accurately by interpreting, translating and producing civil engineering documents.
2. Complete all work in compliance with the rights and conditions of contractual obligations; applicable law, standards, by-laws and codes; and the accepted principles and practices of civil engineering.
3. Monitor the quality and quantity of work for civil engineering projects.
4. Contribute to designing, planning, inspecting and constructing civil engineering projects.
5. Apply principles of mathematics and science to analyse and solve technical problems related to civil engineering projects.
6. Use electronic technology to support civil engineering projects.
7. Maintain civil engineering project records, logs and inventories
8. Recognize the interdependence of the architectural, structural, mechanical and electrical disciplines relating to civil engineering projects.
9. Facilitate communication among project stakeholders involved in the design and implementation of civil engineering projects.

III. REQUIRED RESOURCES/TEXTS/MATERIALS:*Construction Project Management*

Frederick E. Gould and Nancy E. Joyce

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IV. EVALUATION PROCESS/GRADING SYSTEM:

Assignments and Activities (5-7)	50%
Mid-term Test	25%
Final Test	25%
Total	<hr/> 100%

The following semester grades will be assigned to students:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
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.	

V. SPECIAL NOTES:Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session. Late arrivers may not be granted admission to the room.

Assignments and Examination Policy:

If a student is unable to write a test or exam at the scheduled time the following procedure shall apply:

- The student shall provide the professor with advance notice (in writing) of the need to miss the test
- The student shall provide documentation as to the reason for the absence and the make-up will be at the discretion of the professor.
- Upon return the student is responsible to make arrangements for the writing of the test. This arrangement shall be made prior to the next schedule class.
- In the event of an emergency, the student shall telephone the professor as soon as possible at 759-2554, to notify of the absence. If the professor is not available, the college has a 24 hour voice mail system.
- In the event of a test missed due to emergency, the student shall provide documentation from a professional such as doctor or lawyer.

All late assignments (without documentation) will receive a maximum grade of C (60%). Assignments more that one week late may receive a grade of zero.

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.

VI. TOPIC OUTLINE

Outcome	Topic and Content	Reading	Week
8,6	1. Overview of the Construction Industry <ul style="list-style-type: none"> 1.1. Size and Importance of Construction 1.2. Construction Sectors 1.3. Viewing the Construction Industry 1.4. Technology in Construction 1.5. Construction Industry as a Profession 	Chapter 1	1
8,2	2. Project Participants <ul style="list-style-type: none"> 2.1. Quiz Chapter 1 2.2. Private and Public Ownership 2.3. Owner Representatives 2.4. Design Professionals (Architects & Engineers) 2.5. Construction Professionals <ul style="list-style-type: none"> 2.5.1. Constructors 2.5.2. Specialty Contractors 2.5.3. Trades 2.5.4. Suppliers 2.6. Video – Skyscraper (Rock and Paper) 2.7. Assignment 1 	Chapter 2 LMS	2
1,2,7,8,9	3. Organizing and Leading Construction Projects <ul style="list-style-type: none"> 3.1. Quiz Chapter 2 3.2. Organizing and Managing Construction Projects <ul style="list-style-type: none"> 3.2.1. Work Breakdown 3.2.2. Quality Management 3.3. Legal forms of Business Organizations 3.4. Leadership and Communication 3.5. Video – Skyscraper (Time and Money) 3.6. Assignment 2 	Chapter 3 LMS	3,4
2,4,7,3	4. Project Delivery Methods <ul style="list-style-type: none"> 4.1. Quiz Chapter 3 4.2. Managing Risk 4.3. Conventional Delivery (Design/Bid/Build) 4.4. Design/Build 4.5. Construction Management (CM) 4.6. Contract Types 4.7. Changes to Contracts 4.8. Video – Skyscraper (Steel and Stone) 	Chapter 4 LMS	5

2,3,4	5. Project Chronology	Chapter 5 LMS	6
	5.1. Quiz Chapter 4		
	5.2. Feasibility and Financing		
	5.3. Project Design		
	5.4. Procurement		
	5.5. Construction		
	5.6. Turnover and Commissioning		
	5.7. Video – Skyscraper (Copper and Diamond)		
	5.8. Assignment 3		
	6. Mid-Term Test		7
	<i>All material to Chapter 1-5 inclusive</i>		
1,2,4,7	7. Construction Services During Design, Bidding and Procurement	Chapter 6	8,9
	7.1. Selecting a Construction Manager		
	7.2. Role/Responsibility of Construction Manager		
	7.2.1. Site Investigation		
	7.2.2. Design Review		
	7.2.3. Estimating and Scheduling		
	7.3. Construction Documents	Chapter 7	
	7.4. Bid Information	Handout	
	7.5. Contractual Information		
	7.5.1. CCDC2		
	7.6. Bonds and Insurance		
	7.7. Drawings and Specifications		
	7.8. Contract Award		
	7.9. Assignment 4		
1,3,8,9	8. Construction and Close-out	Chapter 8	10
	8.1. Quiz Chapter 6		
	8.2. Subcontracts and Startup		
	8.3. Productivity		
	8.4. Job Site Organization		
	8.5. Completion and Turnover		
4,5,6	9. Project Planning, Scheduling and Controlling	Chapter 10 LMS	11,12 and 13
	9.1. Scheduling Entire Project		
	9.2. Planning and Scheduling Process		
	9.3. Scheduling Methods		
	9.3.1. Bar Charts		
	9.3.2. Network Schedules		
	9.4. Create a Construction Schedule with MS Project		
	9.4.1. Define Activities		
	9.4.2. Network Diagrams		

	9.4.3. Calculating and Refining		
	9.5. Monitoring a Schedule		
	9.6. Assignment 5		
1,8,9,2	10. Project Administration and Construction Law	Chapter 12 Chapter 13 LMS	14
	10.1. Meeting Minutes and Progress Reports		
	10.2. Application for Payment		
	10.3. Progress Review and Payment Procedures		
	10.4. Holdback		
	10.5. Changes		
	10.6. Claims and Disputes		
	10.7. Construction Law		
	10.7.1. Contracts		
	10.7.2. Construction Lien Act		
	10.7.3. Calculation of Substantial Performance		
	10.7.4. Release of Holdback		
	10.7.5. Federal, Provincial and Local Laws		
	10.7.6. Dispute Resolution		
	10.8. Assignment 6		
	11. Final Test		15
	<i>All material covered to date</i>		