CANADORE college

COURSE NAME:	CIV230 Transportation Planning
Credit Value:	4
Total Course Hours:	56
Prerequisite Course(s):	CIV220 CAD200
Corequisite Course(s):	None

COURSE DESCRIPTION

This course enables the participants to identify and classify the full range of road systems in Ontario from the forest access road, through municipal road systems, to the multi-lane highway systems. Participants will describe the physical make-up of those systems including geometric design components, pavement design and traffic control systems. Participants will acquire the basic tools to plan, design, and analyze the various transportation systems in Ontario. Selected models for roadway design will be analyzed for their effectiveness. An integral part of this introductory-level course may include field trips to local and regional highway projects, and a tour of MTO's Northeast Regional Office. Site visit reports will be submitted after each visit. Towards the end of the course, all students will complete a design project for a transportation system taking into account all the facets covered. The design Project will require students to utilize skills learned from CAD 200.

LAND ACKNOWLEDGEMENT

Canadore College resides on the traditional territory of the Anishinaabeg and within lands protected by the Robinson Huron Treaty of 1850. This land is occupied by the people of Nipissing First Nation since time immemorial.

PLAR INFORMATION

This course is eligible for Prior Learning Assessment and Recognition. Students are advised to discuss options with their program coordinator.

COURSE LEARNING OUTCOMES

Upon completion of this course, the student will have reliably demonstrated the ability to:

1.0 Understand the major and minor road classification systems used in Ontario and their relevant design requirements.

- 1.1 Provincial Highways and Regional Roads
- 1.2 Municipal Roads
- 1.3 Applicable Ontario Provincial Standards

2.0 Describe the typical physical make-up of various road systems including road-related structures.

- 2.1 Define typical construction terms and sequencing for traffic control and work.
- 2.2 Identity excavation and embankment construction types and determine OPS limits.
- 2.3 Understand pavement structures and locate appropriate standards.
- 2.4 List various traffic control measures and describe typical uses siting advantages and disadvantages.
- 2.5 Evaluate geometric design and perform typical mathematical calculations with respect to horizontal curves, vertical curves, super-elevation, etc.

3.0 Identify and define design criteria for transportation design based on published standards and available data.

- 3.1 Understand relevant Ontario and local municipal design guideline documents and be able to locate information within those documents.
- 3.2 Understand standard North American design requirements.
- 3.3 Choose a design speed appropriately and apply that design speed to determine various speed related design parameters.
- 3.4 Understand axle Loading and its effect on related design parameters.

4.0 Develop and complete geometric design for a specified road system.

- 4.1 Evaluate the design and construction process.
- 4.2 Review route alignment design including horizontal and vertical curves.
- 4.3 Create and apply intersections and passing lanes appropriately.
- 4.4 Determine spiral curve geometry in combination with super-elevation.

5.0 Understand and incorporate the physics of traffic and vehicular motions into the design process.

- 5.1 Calculate braking distances.
- 5.2 Evaluate vehicle forces on curves.
- 5.3 Verify the existence of intersection dilemma zones.
- 5.4 Choose appropriate values of frictional coefficients for various road conditions.

6.0 Analyze traffic flows to incorporate suitable traffic control measures into the design of a road system.

- 6.1 Understand the effects that time of day and demand forecasting have on traffic flow analysis.
- 6.2 Understand, find and apply typical AADT data.
- 6.3 Determine a facility's capacity and develop relationships between speed, vehicle density, and flow.
- 6.4 Back-up routes.

7.0 Understand traffic loading design criteria and incorporate with subgrade information to develop a suitable pavement design.

- 7.1 Understand road subgrade information and data.
- 7.2 Identify typical types of pavement layers and arrangements.
- 7.3 Understand the effects of environmental factors on sub-grade and pavement design.
- 7.4 Determine traffic Loading including axle loading weights and repetitions.

8.0 Present reports using appropriate graphics, word processing, spreadsheet, database, and presentation software.

- 8.1 Utilize AutoCAD Civil3D to create industry standard road/highway drawings.
- 8.2 Summarize Design Criteria and appropriately reference.
- 8.3 Include background design information within report effectively.

9.0 Apply standard conventions for document control.

GENERAL EDUCATION

This is not a General Education course.

PROGRAM OUTCOMES

This course contributes to the following Ministry of Colleges and Universities approved program learning outcomes (PLO):

Civil Engineering Technician

3. Complete duties and assist in monitoring that work is performed in compliance with contractual obligations, applicable laws, standards, bylaws, codes and ethical practices in the civil engineering field.

4. Carry out sustainable practices* in accordance with contract documents, industry standards and environmental legislative requirements.

5. Collaborate with the project team and communicate effectively with project stakeholders to support civil engineering projects.

6. Collect, process and interpret technical data to produce written and graphical project-related documents.

8. Participate in the design and modeling phase of civil engineering projects by applying engineering concepts, basic technical mathematics and principles of science to the review and production of project plans.

Civil Engineering Technology

3. Complete duties and monitor that work is performed in compliance with contractual obligations, applicable laws, standards, bylaws, codes and ethical practices in the civil engineering field.

4. Promote and carry out sustainable practices in accordance with contract documents, industry standards and environmental legislative requirements.

5. Facilitate the collaboration and interaction among the project team and project stakeholders to support civil engineering projects.

6. Collect, process, analyze and coordinate technical data to produce written and graphical project-related documents.

8. Participate in the design and modeling phase of civil engineering projects by applying engineering concepts, technical mathematics and principles of science to the review, production and/or modification of project plans.

ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES

This course contributes to the following Ministry of Colleges and Universities approved essential employability skills (EES) outcomes:

1. Communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfils the purpose and meets the needs of the audience.
2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.
3. Execute mathematical operations accurately.
4. Apply a systematic approach to solve problems.
5. Use a variety of thinking skills to anticipate and solve problems.
10. Manage the use of time and other resources to complete projects.
11. Take responsibility for one's own actions, decisions, and consequences.

EXTERNAL COURSE ACCREDITATIONS AND CONDITIONS

There are no external accreditations or conditions identified for this course.

COURSE EVALUATION

Evaluation Item	Weight
Assignments	25
Term Project	30
Final Exam	35
Professionalism	10

COURSE PASS GRADE

50

GRADING SYSTEM

A+:	90-100%	B+:	77-79%	C+:	65-69%	D:	50-54%	S - Satisfactory
A:	85-89%	B:	73-76%	C:	60-64%	F:	0-49%	I - Incomplete
A-:	80-84%	B-:	70-72%	D+:	55-59%			F- Repeat Course, included in GPA
								FS- Failure Supplemental
								FR- Repeat course, excluded from GPA

*For a complete chart of grades and descriptions, please see the Grading Policy.

LEARNING RESOURCES

Course Textbooks:

Recommended:

Title:	Highway Engineering and Traffic Analysis
Author:	Fred.L. Mannering; Scott. Washburn.S
Publisher:	Wiley
Edition:	2020
Print ISBN:	978-1-119-72319-6 (PBK)
eBook ISBN:	LCCN 2019039406

Additional Learning Resources:

Course Notes and Provided Technical Documents

Please see the Campus Bookstore to verify the current textbook costs and your program page for additional program fees and/or learning material requirements (see the "Tuition Fees" and "What You Need" sections).

Resources listed on the course outline support the achievement of learning outcomes, and may be used throughout the course to varying degrees depending on the instructor's teaching methodology and the nature of the resource.

Technology requirements - https://www.canadorecollege.ca/BYOD

The Harris Learning Library's staff can help you find resources to support your learning - www.eclibrary.ca

LEARNING ACTIVITIES

In Class instruction/discussion
Instructor demonstration
Individual hands-on practice
In-class assignments
Field Trip Reports

DELIVERY MODE

This course may be delivered, in whole or in part, in a number of modalities, including In-Person, Remote (synchronous and/or asynchronous), hybrid, or Hyflex, as per accreditation and/or regulatory standards where appropriate. This information is identified on the course schedule (student and faculty).

RECORDING GUIDELINES

This class may be recorded by faculty of the College. Faculty will inform students when recording of the class commences and ceases. 'Recorded' means that the audio-visual and chat portions of the class will be recorded and then be stored on the College or vendor provider server. They will be made available to students, but only for the express and sole use of those registered in this course. If you have any questions or concerns about this recording, please contact your instructor or the College's privacy officer at privacy.officer@canadorecollege.ca. Full recording guidelines can be found at: https://cdn.agilitycms.com/canadore-college/academic-centre-of-excellence/Canadore%20Recording%20Guidelines.pdf

EXPERIENTIAL LEARNING

All full-time programs of study at Canadore College strive to provide students with the opportunity for experiential learning. This course provides students with an experiential learning opportunity through:

Workplace/Lab Simulation (EL)
Formal Course Projects (EL)

ACADEMIC POLICIES

Canadore College is committed to the highest standards of academic integrity, and expects students to adhere to these standards as part of the learning process in all environments. The College's Academic Integrity policy seeks to ensure that all students understand their rights and responsibilities in upholding academic integrity and that students receive an accurate and fair assessment of their work. Please review the Academic Integrity policy (A-18) and other academic policies found on our website:
https://www.canadorecollege.ca/about/policies.

COLLEGE POLICIES

- Protecting human rights in support of a respectful college community

For college policies please see: http://www.canadorecollege.ca/about-us/college-policies.

Accessibility Learning Services for Students with Disabilities - Student Success Services

Student Success Services provides comprehensive support to students. We aim to ensure that all students have equal access to educational opportunities and can succeed in their academic journey. Our services focus on reducing and eliminating barriers related to education through individualized accommodations and support. If you are a student with a disability, we encourage you to register with Accessible Learning by completing the Student Success – Accessible Learning Services Form (https://canadorecollege-accommodate.symplicity.com/public_accommodation/).

For more detailed information about the services offered, please visit our webpage: Student Success Services - (https://www.canadorecollege.ca/support/student-success-services). To connect with Student Success Services email studentsuccessnow@canadorecollege.ca or call 705.474.7600 ext 5205.

FIRST PEOPLES' CENTRE:

A culturally safe environment offering CONFIDENTIAL student focused services, drop in or make an appointment to access:

- One on one counselling
- Elder in residence program
- Peer tutoring
- Peer mentorship
- Lunch & learn workshops on study skills, self-care, life skills
- Learning Resource Centre

Drop by our offices at C254 College Drive, W103 Commerce Court or call 705 474 7600 Ext. 5961 College Drive / 5647 Commerce Court.

https://www.canadorecollege.ca/experience/indigenous-student-experience

WAIVER OF RESPONSIBILITY

Every attempt is made to ensure the accuracy of this information as of the date of publication. The college reserves the right to modify, change, add, or delete content.

HISTORICAL COURSE OUTLINES

Students use course outlines to support their learning. Students are responsible for retaining course outlines for future use in applications for transfer of credit to other educational institutions.