



## COURSE OUTLINE: CIV216 - HIGHWAY ENGINEERING

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Approved: Corey Meunier, Chair, Technology and Skilled Trades

<b>Course Code: Title</b>	CIV216: HIGHWAY ENGINEERING
<b>Program Number: Name</b>	4080: CIVIL ENG TECHNICIAN
<b>Department:</b>	CIVIL/CONSTRUCTION
<b>Academic Year:</b>	2022-2023
<b>Course Description:</b>	This course will introduce the student to fundamental concepts in the field of transportation engineering. The student will develop a working knowledge of road classification, level of service, traffic study, highway geometrics and intersection design. Computer and survey applications will be discussed when appropriate.
<b>Total Credits:</b>	4
<b>Hours/Week:</b>	4
<b>Total Hours:</b>	56
<b>Prerequisites:</b>	There are no pre-requisites for this course.
<b>Corequisites:</b>	There are no co-requisites for this course.
<b>Vocational Learning Outcomes (VLO's) addressed in this course:</b>	<b>4080 - CIVIL ENG TECHNICIAN</b>
<b>Please refer to program web page for a complete listing of program outcomes where applicable.</b>	VLO 4 carry out sustainable practices in accordance with contract documents, industry standards and environmental legislative requirements.
	VLO 7 use industry-specific electronic and digital technologies to support civil engineering projects.
	VLO 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.
<b>Essential Employability Skills (EES) addressed in this course:</b>	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
	EES 3 Execute mathematical operations accurately.
	EES 4 Apply a systematic approach to solve problems.
	EES 5 Use a variety of thinking skills to anticipate and solve problems.
	EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.
	EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
	EES 10 Manage the use of time and other resources to complete projects.
	EES 11 Take responsibility for ones own actions, decisions, and consequences.
<b>Course Evaluation:</b>	Passing Grade: 50%, D



	A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
<b>Other Course Evaluation &amp; Assessment Requirements:</b>	<p>Grade            Definition Grade Point Equivalent            A+ 90 - 100% 4.00            A 80 - 89%            B 70 - 79% 3.00            C 60 - 69% 2.00            D 50 - 59% 1.00            F (Fail) 49% and below 0.00</p> <p>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.</p>

<b>Course Outcomes and Learning Objectives:</b>	<b>Course Outcome 1</b>	<b>Learning Objectives for Course Outcome 1</b>
	Upon successful completion, the student will be able to: 1. Identify classifications, characteristics and sources of design criteria for streets and highways	
	<b>Course Outcome 2</b>	<b>Learning Objectives for Course Outcome 2</b>
	Upon successful completion, the student will be able to: 2. Identify and apply local, regional and national standards and specifications for roads and Highways.	2.1 Determine minimum horizontal radii for road and highway curves utilizing formulas and tables. 2.2 Calculate simple circular and transitional spiral curves to meet design requirement. 2.3 Calculate minimum, maximum and full superelevations for given horizontal alignment. 2.4 Determine maximum and minimum vertical curve lengths and select suitable lengths to meet design requirements for recommended rates of vertical change.
	<b>Course Outcome 3</b>	<b>Learning Objectives for Course Outcome 3</b>
	Upon successful completion, the student will be able to: 3. Identify utility requirements for proposed street and highway developments and assess their potential environmental impact.	
	<b>Course Outcome 4</b>	<b>Learning Objectives for Course Outcome 4</b>

	<p>Upon successful completion, the student will be able to:</p> <p>4. Identify, prepare and present design drawings of horizontal and vertical alignments.</p>	<p>4.1 Identify procedures required to conduct environmental impact studies.</p> <p>4.2 Identify qualitative and quantitative data from environmental studies.</p>
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**Evaluation Process and Grading System:**

<b>Evaluation Type</b>	<b>Evaluation Weight</b>
Assignments	40%
Final Exam	30%
Mid-Term Exam	30%

**Date:** January 9, 2023

**Addendum:** Please refer to the course outline addendum on the Learning Management System for further information.