CAMOSUN COLLEGE
School of Trades and Technology
Department of Civil Engineering Technology

CIVE 152
Transportation Engineering
Winter 2020

COURSE OUTLINE

Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

1 Instructor Information

Instructor	Peter Fell, P.Eng.		
Office hours	See course website and office for posting		
Location	TEC 108		
Phone	250-370-4483	Alternative:	250-857-2547 (Text please)
E-mail	fellp@camosun.bc.ca		
Website	http://civil.camosun.bc.ca/student/		

2 Prerequisites and Corequisites

Pre/Co-requisite: 'C' in CIVE 132

3 Hours and Credits

Course Activity	Hours / Week	Instruction – No of Weeks
☒ **Lecture (Direct Instruction)**	2	14
☐ **Seminar (Direct Instruction)**		
☒ **Lab /Collaborative Learning**	3	14
☐ **Supervised Field Practice**		
☐ **Workplace Integrated Learning** *(Coop, Internship, etc.)*		
☐ **Other*(*please note*):**		

Credits = 3

4 Short Description

Students are introduced to the analysis and design of transportation systems at several jurisdictional levels and design domains from rural divided highways to local urban roadways. Students learn how to design cross-sections and explore safety considerations, road drainage and mixed-mode uses. An overview of traffic operations is given to familiarize the student with current analysis methods.

5 Intended Learning Outcomes

Upon successful completion of this course, students will be able to:

- Identify legislative authorities and discuss relationships between municipal, regional, provincial and federal highway and transportation jurisdictions.
- Evaluate and select standard roadway cross-sections appropriate to meet classification, traffic volume and safety requirements.
- Propose appropriate roadway components related to aesthetics, environmental impact and cost, while considering pedestrians, cyclists, emergency vehicles, transit users, and utilities.
- Design geometric elements of horizontal and vertical road alignments, incorporating appropriate design criteria, guidelines and best practices for low speed and high speed urban and rural design domains.
- Discuss the goals and types of roadway drainage systems and describe their major components.
- Discuss environmental, social, and economic issues typically encountered within transportation systems related to alternate and mixed modes and users.
- Describe the design and general construction process undertaken for highway projects.
- Calculate and balance earthwork volumes and construct mass haul diagrams.
- Analyse and design intersections to meet required capacity, safety, physical constraints, and aesthetics.

6 Course Content and Schedule

a) Refer to the course website for course content and updates to the schedule

b) This course consists of 2 hours of lecture and 3 hours lab per week. Lectures are Wednesday 2:30 to 4:20pm – TEC 177. Labs are:

   i. Section X01A Monday 2:30 to 5:20pm – TEC150.

   ii. Section X01B Tuesday 8:30 to 11:20am – TEC151.

Week	*Lecture Topic*	*Lab Topic*
1	Course overview Introduction to Transportation Engineering	Design Considerations - Design parameters, regulations, Traffic considerations
2	Design Considerations - Classification of Highways	Traffic flow / Speed, flow and density
3	Guest Lecturer – Automated Traffic Counting	Level of service & classification
3	Design Parameters - Design vehicles	Design Parameters - Sight distance
4	Geometric design - Cross section design Design Parameters - Capacity and level of service	Sight distance / Design vehicles
5	Design Parameters - Capacity and level of service	Cross section considerations / Capacity and Level of Service
6	Geometric Design – Horizontal Alignment (circular curves) Review for Mid-term	Capacity and Level of Service
7	Reading Break (no lecture)	No lab
8	Mid-term Exam	Horizontal alignment (circular curves)
9	Geometric Design – Horizontal Alignment (spiral curves)	Introduction to Civil3D / Alignments and circular curves
10	Geometric Design – Vertical Alignment	Horizontal alignment (spiral curves)

11	Geometric Design – Design integration / Intersection design	Vertical design
12	Geometric Design – Earthworks design	Design integration / Intersection design
13	Geometric Design - Intersection design	Earthworks balancing / Mass Haul
14	Design Considerations - Parking / Misc topics	Review for Final Exam
15	Exam Week – Final Exam	

Notes:

1) *This course schedule is subject to change. Please refer to the course website for updates.*
2) *For the majority of weeks that a lab is held, it includes a corresponding lab assignment. Generally the lab is due the following week, unless noted otherwise.*

7 Basis of Student Assessment

Component	*Weighting %*	*Comments*
Labs	20	Individual labs, unless otherwise noted.
Mid-Term Exam	25	Open book, held during week 8.
Final Exam	50	Open book, held during exam week.
Instructor Assessment	5	Instructor assessment based upon attendance, cooperation, participation, not submitting plagiarized work, etc.
TOTAL	100	

8 Required Materials to Assist Students to Succeed Throughout the Course

a) Texts:
   1. Transportation Association of Canada (TAC), *Geometric Design Guide for Canadian Roads*,TAC, 2017, ISBN 1978-1-55187-614-6
   2. Handouts posted to course webpage

b) Other (Recommended):
   1. Kavanagh, Barry F., *Surveying with Construction Applications, 8th Ed,* Prentice-Hall, Toronto, 2015, ISBN-13: 9780132766982
   2. British Columbia. Ministry of Transportation (MOT), *BC Supplement to TAC Geometric Design Guide. – 2019 3rd Ed.*, MOT, 2019, ISBN 978-0-7726-7322-0 (available online)
   3. Additional reference material posted to course webpage or accessed on-line.

9 College Supports, Services and Policies

Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ http://camosun.ca/about/mental-health/emergency.html or http://camosun.ca/services/sexual-violence/get-support.html#urgent

College Services
Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at http://camosun.ca/

College Policies
Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at http://camosun.ca/about/policies/. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

10 Grading System

☒ *Standard Grading System (GPA)*
☐ *Competency Based Grading System*

See Camosun Grading Policy E-1.5

11 Class Policies

- Unless otherwise noted, all assignments are to be completed individually.
- Assignments are due at the start of the applicable lecture or lab period, unless otherwise noted. Late assignments will have 10% deducted. Assignments submitted after graded assignments have been returned or solutions are posted are worth 0.
- You must complete all assignments in order to qualify to write the final exam.
- You must achieve 50% on the final exam in order to pass the course. In addition, a weighted average of 50% on the mid-term and final exam must be achieved in order to pass the course.
- A mark of at least a C must be attained to gain credit for the purposes of continuing-on to courses for which this course is a pre-requisite.
- Attendance for the lectures and labs is included as part of the instructor assessment portion of your final grade. Attendance for the lectures is expected and for labs is mandatory. If you plan to or do miss a lecture or lab you must speak to the instructor.
- Equity, diversity, and inclusion (EDI) are central to Camosun's culture and values. The Camosun community and the engineering community at large commit to pursuing equity in education regardless of race, heritage, religion, gender or gender identity, and ability. We learn best when we feel safe. Inappropriate, hateful or demeaning comments or actions will not be tolerated. Your suggestions on how to make your experience here better are encouraged and appreciated. Please let me or the department chair know ways to improve your experience at Camosun. If you wish to know more about Camosun's EDI policy, please see the EDI page on the college's website: http://camosun.ca/about/policies/equity-diversity-inclusion.html