Faculty of Engineering
Department of Civil Engineering
COURSE OUTLINE

CIVE 299 – Geomatics Engineering A01 (10588)
Term – Fall 2017 (201709)

Instructor | Office Hours | Instructor (Surveying)
--- | --- | ---
Harald Steiner | Monday | Ron Johns
Phone: 778 977-6647 | 5:30pm – 6:30pm | hsteiner@uvic.ca

Note: Please come to see me during office hours only. Please indicate “CIVE 299” in the email subject for all email correspondence. I will try to return emails within 24 hours of being sent during a work week but will not respond to emails sent within 24 hours of a test or assignment due date.

PRE-REQUISITES
CIVE 299 has a mandatory Survey Camp portion. The Survey Camp takes place on campus Tuesday, September 5 through to Saturday, September 9. All students must attend.

LECTURE DATE(S)
A01/CRN 10588 | Monday | 7:00 pm - 8:20 pm | Location: ECS 116

TUTORIAL SECTIONS
T01/CRN 10588 | Monday | 3:30 pm - 4:20 pm | Clearihue Building A212

LAB SECTIONS
<table>
<thead>
<tr>
<th>CRN</th>
<th>Days</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>10589</td>
<td>Tuesday</td>
<td>2:30 pm - 5:20 pm</td>
<td>Engineering Lab Wing B220</td>
</tr>
<tr>
<td>10590</td>
<td>Tuesday</td>
<td>2:30 pm - 5:20 pm</td>
<td>Engineering Lab Wing B220</td>
</tr>
<tr>
<td>10591</td>
<td>Thursday</td>
<td>12:00 pm - 2:50 pm</td>
<td>Engineering Lab Wing B220</td>
</tr>
</tbody>
</table>

TA NAME (GIS LABS) | E-mail | Office
--- | --- | ---
Majid Soleimani nia | majids@uvic.ca |  
Gurpreet Singh Jagdev | gsj@uvic.ca |  
Harshbab Singh | harshbabsingh@uvic.ca |  

TA Name (SURVEY LABS) | E-mail | Office
--- | --- | ---
Rojin Derakhshan | rojind@uvic.ca |  
Erin Jones | joneserin@shaw.ca |  
Geethanjali Kutturu | geethu_kutturu@yahoo.com |  
Kear Porttris | porttris@uvic.ca |  
Matthew Walker | mattwalker@uvic.ca |  
Nouman Zubair | nouman.zubair@hotmail.com |  

Learning Outcomes next page
### Text Books

<table>
<thead>
<tr>
<th>Text Books</th>
<th>INFO</th>
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### COURSE OBJECTIVES

Comfort, fluidity and knowledge of the fundamentals, field surveying, software and data sources of contemporary, professional geomatics engineering

### LEARNING OUTCOMES

- Describe the principles of GIS, remote sensing, LIDAR, GPS and field surveying
- Understand the civil engineering applications of geomatics engineering
- Compute rectangular and polar coordinates on a simple plane, areas of closed polygons and earthwork volumes
- Carry out field measurements for a leveling loop and produce a scaled topographic plan using a total station
- Acquire diverse geomatics data and evaluate its quality and appropriateness
- Use GIS software to analyse raster and vector data
- Creatively problem-solve complex spatial problems by analytically ‘thinking with maps’

### COURSE GRADING

<table>
<thead>
<tr>
<th>Weight &amp; Date(s) of Assessments:</th>
<th>Weight</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey Lab</td>
<td>35 %</td>
<td></td>
</tr>
<tr>
<td>GIS Assignments</td>
<td>10 %</td>
<td></td>
</tr>
<tr>
<td>Project Proposal</td>
<td>10 %</td>
<td></td>
</tr>
<tr>
<td>Applying Geomatics Engineering</td>
<td>05 %</td>
<td></td>
</tr>
<tr>
<td>Final Exam</td>
<td>40 %</td>
<td>Date: TBA</td>
</tr>
</tbody>
</table>

### ASSIGNMENTS

- Three problem sets will be distributed over the course of the term via the CIVE 299 Course Space site.
- The assignment problems will require the use of ArcGIS software to complete.
- All assignments and projects should be completed and handed in with a partner and will be graded together.
- All assignments and projects should be uploaded through the CourseSpaces to reduce paper use (and may be analyzed Turnitin, a digital plagiarism program).
• All assignments and projects are due at 12 noon on the date shown on CourseSpaces or modified by the instructor or TA.
• The late penalty is 20% per day, starting at 12:05 on the due date (i.e. 20% will be deducted from an assignment handed in 12:06 on the due day).
• You will show how you could apply geomatics engineering in your career through ‘Geomatics engineering and me’, the final presentation of the final project, and classroom discussions of solving geomatics problems.

LABORATORIES
• The laboratory sessions will be used to complete instruction and training on the use of ArcGIS software. Not all of the laboratory periods will be used for instructional purposes.
• Announcement of active laboratory sessions will be provided in lecture periods.
• The laboratories will include instructional work that is expected to help students develop proficiency with ArcGIS.
• Lab reports are to be completed in teams.
• All lab reports should be uploaded through the CourseSpaces to reduce paper use.

PROJECT PROPOSAL
• The submission of a project for a geomatics engineering related project will be of choice and in conjunction with a partner.
• The project proposal submission should be in the form of an electronic document (word document or pdf file) and be 2-5 pages long, including three main sections: 1) Project Description, 2) Objectives, and 3) Approach to a project.
• All assignments and projects are due at 12 noon on the date shown on CourseSpaces or modified by the instructor or TA.

NOTE
The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar. There will be no supplemental examination for this course. Alternative dates for the midterm or final will not be available unless students have sufficient documentation demonstrating a need for absence due to a death in the family or illness.

COURSE LECTURE NOTES
Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.

GENERAL INFORMATION
Note to Students:
Students who have issues with the conduction of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Chair’s Secretary to set up an appointment.

"Attendance"
Students are expected to attend all classes in which they are enrolled. An academic unit may require a student to withdraw from a course if the student is registered in another course that occurs at the same time....
An instructor may refuse a student admission to a lecture, laboratory, online course discussion or learning activity, tutorial or other learning activity set out in the course outline because of lateness, misconduct, inattention or failure to meet the responsibilities of the course set out in the course outline. Students who neglect their academic work may be assigned a final grade of N or debarred from final examinations.

Students who do not attend classes must not assume that they have been dropped from a course by an academic unit or an instructor. Courses that are not formally dropped will be given a failing grade; students may be required to withdraw and will be required to pay the tuition fee for the course.” UVic Calendar, (2017) http://web.uvic.ca/calendar2017-09/undergrad/info/regulations/attendance.html

ACCOMMODATION OF RELIGIOUS OBSERVANCE
The University recognizes its obligation to make reasonable accommodation for students whose observance of holy days might conflict with the academic requirements of a course or program.
Students are permitted to absent themselves from classes, seminars or workshops for the purposes of religious or spiritual observance.
In the case of compulsory classes or course events, students will normally be required to provide reasonable notice to their instructors of their intended absence from the class or event for reasons of religious or spiritual observance. In consultation with the student, the instructor will determine an appropriate means of accommodation. The instructor may choose to reschedule classes or provide individual assistance.
Where a student’s participation in a class event is subject to grading, every reasonable effort will be made to allow the student to make up for the missed class through alternative assignments or in subsequent classes. Students who require a rescheduled examination must give reasonable notice to their instructors. If a final exam cannot be rescheduled within the regular exam period, students may request an academic concession.

To avoid scheduling conflicts, instructors are encouraged to consider the timing of holy days when scheduling class events. For further information, including a list of days of religious observances, please contact the Equity and Human Rights Office or visit their website: web.uvic.ca/eqhr.

Discrimination and Harassment Policy (GV0205) http://web.uvic.ca/calendar2017-09/general/policies.html

Faculty of Engineering, University of Victoria
Standards for Professional Behaviour
“It is the responsibility of all members of the Faculty of Engineering, students, staff and faculty, to adhere to and promote standards of professional behaviour that support an effective learning environment that prepares graduates for careers as professionals....”

You are advised to read the Faculty of Engineering document Standards for Professional Behaviour which contains important information regarding conduct in courses, labs, and in the general use of facilities. http://www.uvic.ca/engineering/current/undergrad/index.php #section0-23

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the Undergraduate Calendar for the UVic policy on academic integrity.

Policy on Academic Integrity http://web.uvic.ca/calendar2017-09/undergrad/info/regulations/academic-integrity.html

Equality
This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Resource Centre for Students with a Disability located in the Campus Services Building.

The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.”
## Course Schedule

<table>
<thead>
<tr>
<th>Module</th>
<th>Topics</th>
<th>Date/Week</th>
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</thead>
<tbody>
<tr>
<td>A01</td>
<td>Survey week&lt;br&gt;Introduction, levelling, traverse computations and topographic surveys</td>
<td>Ghilani &amp; Wolf</td>
</tr>
<tr>
<td>A01</td>
<td>Introduction and why geomatics engineering? &lt;br&gt;Introduce surveying, GIS, remote sensing, LIDAR, photogrammetry and GPS, and geomatics applications in civil</td>
<td>Borstad CH 1 and Ghilani &amp; Wolf CH 1</td>
</tr>
<tr>
<td>A01</td>
<td>Data models for GIS -See maps as data, not pictures or directions to the liquor store -Understand and discuss the characteristics, differences, advantages and disadvantages of GIS data models</td>
<td>Borstad CH 2</td>
</tr>
<tr>
<td>A01</td>
<td>Geodesy, datums, projections and coordinate systems -Explain and appreciate importance and complexity of datums, projections and coordinate systems and their role in rigorous spatial analysis</td>
<td>Borstad CH 4</td>
</tr>
<tr>
<td>A01</td>
<td>Digital data sources, quality and attribute tables - Download and evaluate diverse forms of spatial data - Select vector data based on attributes</td>
<td>Borstad CH 7 and 8</td>
</tr>
<tr>
<td>A01</td>
<td>Spatial and raster analysis - Understand the workflow of spatial and raster analysis - Appreciate the diversity of spatial functions - Describe and implement common spatial functions - Creatively solve spatial problems</td>
<td>Borstad CH 9 and 10</td>
</tr>
<tr>
<td>A01</td>
<td>GNSS and LIDAR - Describe GNSS and LIDAR and how it is applied in geomatics engineering</td>
<td>Borstad CH 5</td>
</tr>
<tr>
<td>A01</td>
<td>READING BREAK</td>
<td>Nov 13- 15</td>
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<tr>
<td>A01</td>
<td>Project Proposal due</td>
<td>TBA</td>
</tr>
<tr>
<td>A01</td>
<td>Examination Period</td>
<td>Dec 4-18</td>
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