

Western University - Faculty of Engineering
Department of Civil and Environmental Engineering

CEE 9632a – Advanced Storm Water Management
Course Outline – 2017FT

- OBJECTIVES:** To understand the issues of urban development related to stormwater quality and quantity control and learn the design of Stormwater Management (SWM) system using SWM Best Management Practices (BMPs) and Low Impact Developments (LIDs). Understand the interdisciplinary nature of stormwater pollution control and provide an insight into the design and modeling of a SWM system.
- PREREQUISITES:** Knowledge in hydrology and hydraulics and familiarity with computers including Excel spreadsheets.
- TOPICS:** (1) Water quality aspects of stormwater collections system, (2) Hydrology for drainage system including minor and major systems, (3) Watershed design using hydrologic computer models, (4) Hydraulics of minor systems using computer models, (5) Design of detention systems including ponds and wetland considering the quality and quantity of the runoff, (6) Green infrastructure using SWM Best Management Practices (BMP's) and Low Impact Development (LID's), (7) Sediment and erosion control and its effects on water quality, and (8) Operation and Maintenance issues of the SWM system.
- CONTACT HOURS:** One 2 – hour lecture per week and one 1 hour tutorial per week. A site visit and guest lecture will also be arranged. The tutorial sessions will require laptops.
- INSTRUCTOR:** Dr. Imtiaz Shah, P.Eng.
Adjunct Professor
Department of Civil and Environmental Engineering
ishah5@uwo.ca
- TEXT:** Class notes and reference materials.
- REFERENCE:**
1. Viessman Jr, Warren, Lewis, Gary L, *Intorudcuctio to hydrology*, 5th edition;
 2. Ven Te Chow, *Open-Channel Hydraulics*, McGraw-Hill. 1998;
 3. M. Hanif Chaudhry, *Open-Channel Flow*, 2008;
 4. Ministry of Environment (MOE), *Stormwater Management Planning and Design Manual* 2003; and
 5. Visual Otthymo *and other user's Manuals* for hydraulic and hydrologic software's.
- ASSIGNMENTS:** Five (05) assignments for the entire course and must be completed and submitted every two weeks. Some assignments will require the use of excel spreadsheet and other softwares such as MATLAB, Visual Otthymo, PCSWM, HEC-RAS etc.
- EXAMINATION:** Final Exam will be 3 hours close book.

EVALUATION:	Assignments:	20%
	Course Project and Presentation:	30%
	Final Examination:	50%

	Total	100%

Note: Students must pass the final examination (at least 50%) to pass this course.

The students will select a project case study provided by the instructor. The assessment will be based on PowerPoint presentation, design project and final report. The project will include the design of SWM system using excel spreadsheet and hydrologic and hydraulic software used in the industry i.e. Visual Otthymo, HEC-HMS, HEC-RAS, PCSWM etc. The student will be required to present the case study using power point. The project should be undertaken in a group.

Use of English:

In accordance with Senate and Faculty Policy, students may be penalised up to 10% of the marks on all assignments, tests, and examinations for the improper use of English. Additionally, poorly written work with the exception of the final examination may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.

Scholastic Offences:

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_grad.pdf.

Plagiarism:

University policy states that plagiarism, defined as the “act or an instance of copying or stealing another’s words or ideas and attributing them as one’s own.” (excerpted from Black’s Law Dictionary, West Group, 1999, 7th ed., p. 1170) is a scholastic offence. In submitting any written work as part of the coursework requirements for this course students must ensure that this work is written in their own words. Whenever students take an idea or a passage of text from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism-detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

A student who is found guilty of plagiarism in respect of any written work submitted as part of the coursework requirements for this course will be given a grade of zero for the submitted work. Repeated acts of plagiarism, either in this course or any other course subsequent to a first offence, will result in the

student being given a failing grade for the course in which the subsequent offence occurs, and may also incur further penalties such as requiring the student to withdraw from the program in which they are enrolled in.

Attendance:

Any student who, in the opinion of the instructor, is absent too frequently from class, laboratory, or tutorial periods will be reported to the Dean (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Dean, the student will be debarred from taking the regular final examination in the course.

Accessibility:

Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

Conduct:

Students are expected to arrive at lectures on time, and to conduct themselves during class in a professional and respectful manner that is not disruptive to others. Late comers may be asked to wait outside the classroom until being invited in by the Instructor. Please turn off your cell phone before coming to a class, tutorial, quiz or exam.

On the premises of the University or at a University-sponsored program, students must abide by the Student Code of Conduct: <http://www.uwo.ca/univsec/board/code.pdf>.

Graduate Course Health and Wellness:

As part of a successful graduate student experience at Western, we encourage students to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your graduate degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western's Campus Recreation Centre. Numerous cultural events are offered throughout the year. Please check out the Faculty of Music web page <http://www.music.uwo.ca/>, and our own McIntosh Gallery <http://www.mcintoshgallery.ca/>. Information regarding health- and wellness-related services available to students may be found at <http://www.health.uwo.ca/>

Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate chair), or other relevant administrators in their unit. Campus mental health resources may be found at http://www.health.uwo.ca/mental_health/resources.html

To help you learn more about mental health, Western has developed an interactive mental health learning module, found here: http://www.health.uwo.ca/mental_health/module.html. This module is 30 minutes in length and provides participants with a basic understanding of mental health issues and of available campus and community resources. Topics include stress, anxiety, depression, suicide and eating disorders. After successful completion of the module, participants receive a certificate confirming their participation.

Sickness and Other Problems:

Students should immediately consult with the Instructor or Department Chair if they have any problems that could affect their performance in the course. Where appropriate, the problems should be documented (see attached). The student should seek advice from the Instructor or Department Chair regarding how best to deal with the problem. Failure to notify the Instructor or Department Chair immediately (or as soon as possible thereafter) will have a negative effect on any appeal.

For more information concerning medical accommodations, please see:
http://www.uwo.ca/univsec/handbook/appeals/accommodation_medical.pdf.

Notice:

Students are responsible for regularly checking their email, and the course OWL site for new notices related to the course.