

## Urban Infrastructure and Land Use

EVDS 616 H(3-0)

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### Introduction

Acquaints students with the key infrastructure systems of a city. Examines current policies, standards and practices, challenges, and innovations in the following infrastructure sectors: water, sewage, waste management, open space, energy, transportation, and communications. Discusses the relationship between infrastructure systems and land use, and its impacts on quality of life, economic development, spatial structure, and the environment. Emphasis is given to sustainable practices in infrastructure development. The course also examines various financial and institutional frameworks for delivering infrastructure systems, and how they vary across different contexts.

### Objective

The objective of this course is to provide students with an understanding of three main topics related to infrastructure:

- 1.The different systems that comprise the urban infrastructure, including the main issues related to cost and long term sustainability
- 2.The relationships between urban infrastructure, transportation, land use, density and quality of the public realm
- 3.The new trends in technology that deliver infrastructure and transportation service in urban centres

### Teaching Approach

The course will consist of a series of lectures, guest lectures, site visits and students' research projects.

Lectures will provide an overview of the different infrastructure systems, the way they function, the main current issues associated with delivering these services, and the challenges in achieving sustainable practices.

Site visits will help experience first hand the operation of some of the most significant infrastructure systems in the city of Calgary, and will present a unique opportunity to interact with the experts and custodians of these.

Visits could include:

- City of Calgary water treatment plant
- City of Calgary sewage treatment plant
- Enmax district energy centre
- University of Calgary co-generation plant
- City of Calgary Emergency Operations Centre
- City of Calgary Roads Operations Centre

Students are expected to punctually attend all site visits, if unable to, they need to communicate this to the teaching team a few days in advance.

Students will present their research of specific case studies associated with a particular infrastructure system and future technologies.

### Content

Main topic areas:

- Introduction to Infrastructure and Transportation
- Water Supply and Delivery
- Sewage and Stormwater Management

- Waste Management
- Power and Lighting
- Transportation, Roads and Neighbourhoods
- People and Walkability
- Transit Systems
- Land Use and Zoning
- Density and People
- Telecommunications and Smart Cities

### Evaluation

Evaluation will be based on the assignments completed during the term. There will be no final examination. The evaluation of each assignment will be based on the specific deliverables indicated on class. All assignments will be individual work.

1. Water Infrastructure	25%
2. Multimodal Transportation	25%
3. Land Use and Density	25%
4. Future Technologies / Built Form	25%
<b>Total</b>	<b>100%</b>

Any anticipated absence should be communicated to the teaching team as soon as possible.

Each component of the course must be completed in order to pass the course as a whole.

Late submission of work is not acceptable, grades will be deducted for work submitted later than the deadline specified in the assignment brief or as discussed in class. One grade will be deducted per late day for example an A will be downgraded to A-.

### Grading Scale

Final grades will be reported as letter grades, with the final grade calculated according to the 4-point range.

Grade	Grade Point Value	4-Point Range	Percentage	Description
A+	4.00	4.00	95 - 100	Outstanding - evaluated by instructor
A	4.00	3.85-4.00	90 - 94.99	Excellent - superior performance showing comprehensive understanding of the subject matter
A-	3.70	3.50-3.84	85 - 89.99	Very good performance
B+	3.30	3.15-3.49	80 - 84.99	Good performance
B	3.00	2.85-3.14	75 - 79.99	Satisfactory performance
B-	2.70	2.50-2.84	70 - 74.99	Minimum pass for students in the Faculty of Graduate Studies
C+	2.30	2.15-2.49	65 - 69.99	All final grades below B- are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements.
C	2.00	1.85-2.14	60 - 64.99	
C-	1.70	1.50-1.84	55 - 59.99	
D+	1.30	1.15-1.49	50 - 54.99	
D	1.00	0.50-1.14	45 - 49.99	
F	0.00	0-0.49	0 - 44.99	

A student who receives a "C+" or lower in any one course will be required to withdraw regardless of their grade point average (GPA) unless the program recommends otherwise. If the program permits the student to retake a failed course, the second grade will replace the initial grade in the calculation of the GPA, and both grades will appear on the transcript.

## Readings

There is no required textbook. The following are recommended resources:

American Planning Association. *Planning and Urban Design Standards*. Wiley Graphic Standards, 2006

Ascher, Kate. *The Works: Anatomy of a City*. The Penguin Press, 2005

Barrat, Claire and Whitelaw, Ian. *The Spotter's Guide to Urban Engineering*. Firefly Books, 2011

Brown, Hillary. *Next Generation Infrastructure. Principles for Post-Industrial Public Works*. Island Press 2014

Bry Sarte, S. *Sustainable Infrastructure: The Guide to Green Engineering and Design*. John Wiley & Sons, 2010

Suzuki, Cervero, and Iuchi, Kanako. *Transforming cities with transit: transit and land-use integration for sustainable urban development*. World Bank Publications 2013 (online)

The City of Calgary. *Design Guidelines For Subdivision Servicing*. 2014 (online)

The City of Calgary. *The City of Calgary 2010 Infrastructure Status Report*. 2010 (online)

### Notes:

1. Written work, term assignments and other course related work may only be submitted by e-mail if prior permission to do so has been obtained from the course instructor. Submissions must come from an official University of Calgary (ucalgary) email account.
2. Academic Accommodations. Students who require an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to their Instructor or the designated contact person in EVDS, Jennifer Taillefer (jtaillef@ucalgary.ca). Students who require an accommodation unrelated to their coursework or the requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Vice-Provost (Student Experience). For additional information on support services and accommodations for students with disabilities, visit [www.ucalgary.ca/access/](http://www.ucalgary.ca/access/)
3. Plagiarism - Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Most commonly plagiarism exists when:(a) the work submitted or presented was done, in whole or in part, by an individual other than the one submitting or presenting the work (this includes having another impersonate the student or otherwise substituting the work of another for one's own in an examination or test),(b) parts of the work are taken from another source without reference to the original author,(c) the whole work (e.g., an essay) is copied from another source, and/or,(d) a student submits or presents work in one course which has also been submitted in another course(although it may be completely original with that student) without the knowledge of or prior agreement of the instructor involved. While it is recognized that scholarly work often involves reference to the ideas, data and conclusions of other scholars, intellectual honesty requires that such references be explicitly and clearly noted. Plagiarism is an extremely serious academic offence. It is recognized that clause (d) does not prevent a graduate student incorporating work previously done by him or her in a thesis. Any suspicion of plagiarism will be reported to the Dean, and dealt with as per the regulations in the University of Calgary Graduate Calendar.
4. Information regarding the Freedom of Information and Protection of Privacy Act (<http://www.ucalgary.ca/secretariat/privacy>) and how this impacts the receipt and delivery of course material
5. Emergency Evacuation/Assembly Points (<http://www.ucalgary.ca/emergencyplan/assemblypoints>)
6. Safewalk information (<http://www.ucalgary.ca/security/safewalk>)
7. Contact Info for: Student Union (<https://www.su.ucalgary.ca/contact/>); Graduate Student representative( <http://www.ucalgary.ca/gsa/>) and Student Ombudsman's Office (<http://www.ucalgary.ca/ombuds/>).