SHORT CALENDAR DESCRIPTION
Practical study of local and regional scale environmental impacts and the planning actions authorities take to reduce vulnerability and increase community resilience.

COURSE OBJECTIVES AND EXPECTED LEARNING OUTCOMES
Environmental resilience requires a comprehensive planning approach, one which is forward thinking, flexible, and grounded in science and practical experience. This course explores planning for resilience from a range of perspective, including city managers, transportation and land use planners, utilities engineers, emergency management and sustainability managers, landscape architects, environmental scientists, and elected officials. All these perspectives contribute to, and reflect the governance of a community, and ultimately influence capacity for resilience.

Case studies from across North America (and elsewhere) will highlight a variety of environmental stressors (including sea level rise, coastal instability, overland flooding, earthquakes, volcanoes) and demonstrate lessons learned and best practices with respect to planning techniques and approaches from a range of communities, from remote towns in the Arctic to population-dense urban centres in British Columbia’s lower mainland, to vibrant port towns in the Maritimes. Note, while the course will explore a range on environmental stressors, a majority of time will be dedicated to climate change.

The objective of the course is to provide students with an opportunity to explore some of the practical and nuanced characteristics of environmental resilience as it relates to city and regional planning. This includes an appreciation of the variety of environmental impacts that stress communities, as well as the decision-dynamics behind the policies and planning actions communities take (or should take) to improve their resilience.

This includes discussing barriers and challenges to gaining buy-in for action, tools, instruments and best practices for facilitating action, as well as some of the dynamics of working with different levels of government and key stakeholders.

This course will require students to develop their critical thinking and communication skills, as well as their project management skills. Students will be required to use time and team management skills to develop and present an engaging facilitated discussion; as well as exercise research and analysis skills for a final presentation and synthesis matrix.

Learning outcomes:
Graduates will comprehend key issues in planning related to environmental, social and economic sustainability and be able to analyze and demonstrate competence in developing policies and plans that address issues related to this.

Graduates will comprehend key issues in planning related to equity, diversity and inclusiveness and be able to analyze and demonstrate competence in developing policies and plans that address issues related to this.

Graduates will be effective at written communication and be able to write professional planning documents and/or academic papers.

Graduates will understand the concept of resilience and be able to apply it to the development and implementation of policies and plans. Furthermore, they will be able to critically evaluate planning issues using a resilience or “adaptive” framework.

Graduates will understand the role of resilience theory in planning and its application to a variety of community types.

Measurement of outcomes:

- Written and oral assignments on the subject.
- Working through “real-world” project from start through completion.

**TOPICS COVERED AND AGENDA**

<table>
<thead>
<tr>
<th>Week</th>
<th>Tuesday</th>
<th>Thursday</th>
</tr>
</thead>
</table>
| W1   | L1 Introduction  
- Overview of syllabus (delivery approach; learning outcomes; requirements/ assignments etc.)  
- Assign Facilitated Discussion groups  
- Assign Resilient Cities groups  
Workshop  
- Assignment 1A | L2 Resilience planning in cities and regions  
- Overview of resilience as a concept  
- Introduce mechanisms for resilience planning  
Workshop  
- Assignment 1A |
|      | W2       | L3 Case study: Nome, Alaska  
- Identify infrastructure vulnerabilities and discuss how resilience is achieved in remote Arctic context.  
Workshop  
- Assignment 1A | L4 Guest lecturer: Chris Down (RPP, MCIP), Municipal & Regional Planning Advisor, Alberta Energy  
- Environmental considerations when planning in Alberta  
Workshop  
- Assignment 1B |
|      | W3       | L5 Guest lecturer: Nicole Bonnett, PhD Candidate, EAS  
- Case Study: Surrey, British Columbia  
Workshop  
- Assignment 1B | L6 Guest lecturer: Kellie Lau (RPP, MCIP), Case Manager, Municipal Government Board  
- Site suitability and resiliency |
|      | W4       | L7 Assignment 1B - Presentation and Workshop:  
- Group 1  
- Group 2  
- Group 3  
- Group 4 | L8 Facilitated Discussion: Group 1  
- Pasquini et al. (2015)  
- Boda & Jerneck (2019)  
- Poku-Boansi & Cobbinah (2018) |
|      | W5       | L9 Guest lecturer: Seghan MacDonald, MSc Candidate, EAS  
- Case Study: Fredericton, New Brunswick | L10 Facilitated Discussion: Group 2  
- Nalau et al. (2015)  
- Hamin et al. (2014)  
- Clar & Steurer (2019) |
|      | W6       | L11 Guest lecturer: Britta Jensen, Assistant Professor, EAS  
- Regional/ urban land use planning in areas teaming with active/ dormant volcanoes | L12 Facilitated Discussion: Group 3  
- Buxton et al. (2011)  
- Carmo et al. (2011)  
|      | W7       | L13 Stakeholder Activity | L14 Workshop  
- Assignment 1C |
W8 (Mar 9 + 11)  | L15 Assignment 1C - Final Presentation:  
- Group 1  
- Group 2  | L16 Assignment 1C - Final Presentation:  
- Group 3  
- Group 4  
W9 (Mar 16 + 18)  | L17 Guest lecturer: Tara Slater, MSc Candidate, EAS  
- Case Study: Dawson City, Yukon  | L18 Guest lecturer: Calvin Chan, Development and Zoning Services, City of Edmonton  
- Planning and zoning in the context of climate adaptation  
W10 (Mar 23 + 25)  | L19 Case study: Homer, Alaska  
- Discuss risk associated with densification of key assets on narrow spit vulnerable to storm surges; risk of community isolation as a result of landslide/road washout of sole highway into town;  
- Discuss governance around adaptive/anticipatory planning.  | L20 Facilitated Discussion: Group 4  
- Kithiia & Dowling (2010)  
- Butler et al (2016)  
Overview of Assignment 3 (Synthesis Matrix)  
W11 (Mar 30 + Apl 1)  | L21 Guest lecturer: Josh Bowen, Manager, Centre for Applied Disaster and Emergency Management, NAIT  
- Emergency management and urban planning  | L22 Facilitated Discussion: Group 5  
- Fu (2020)  
W12 (Apl 6 + 8)  | L23 Case study: Whitehorse, Yukon  
- Discuss vulnerability associated with remoteness and lack of redundancy in infrastructure  
- Discuss governance challenges in the Yukon. Workshop  
- Assignment 3 (Synthesis Matrix)  | L24 Facilitated Discussion: Group 6  
- Villagra-Islas & Alves (2016)  
W13 (Apl 13 + 15)  | L25 Case study: Charlottetown, Prince Edward Island  
- Discuss how sea level rise is affecting private/public property, and the various stakeholders made vulnerable, and approaches authorities are taking to adapt.  | L26 Facilitated Discussion: Group 7  
- Rulleau & Rey-Valette (2017)  
- Doberstein et al (2020)  

**REQUIRED READINGS**

This course does NOT have a designated course pack; please access the required readings from the Library, or through eClass. Be prepared to participate in facilitated class discussion based on the required readings.

L8 (Feb 4) - FD Group 1:  

L10 (Feb 11) - FD Group 2:  

L12 (Feb 25) - FD Group 3:  


L20 (Mar 25) - FD Group 4:

L22 (Apr 1) - FD Group 5:

L24 (Apr 8) - FD Group 6:

L26 (Apr 15) - FD Group 7:

COURSE INSTRUCTION MODES
This course will be taught in a hybrid fashion, via an online format (eClass/ Zoom), including typical lecture and seminar, which will be supplemented with facilitated discussion. Further, instruction will also include a workshop or studio-like aspect, where student-groups will work interactively with the instructor to hone presentations. Course content will include a number of case studies and case-based scenarios, which will require students to work collaboratively to identify and resolve planning challenges in the context of environmental change. The course will include a number of guest lecturers who will discuss resilience planning in the context of their expertise (i.e. as planners, landscape architects, engineers, lawyers, researchers).

COURSE ORGANIZATION
At the first meeting, a general outline of the course will be presented. The course will include hands-on, experiential, and interactive learning, in a collaborative format. The instructor will work closely with students to develop course outputs, and their team-based planning skills. A nominal amount of class time will be provided to work on the group outputs (in a workshop format).
GRADE EVALUATION (SUMMARY)

Students will be evaluated on both output and process. The final grade will have both an individual and pairs component (students may be individually assessed for their contributions to group outputs where there are differences in the quality of the work or level of contribution made by group members). Depending on the project, there may be slight variations in marking components. These will be discussed with the class by the instructor.

Students, however, will be evaluated on a minimum of the following four components:

<table>
<thead>
<tr>
<th>Assignment 1 (teams)</th>
<th>Resilient Cities</th>
<th>%</th>
<th>DUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Overview of Chosen City</td>
<td>5</td>
<td>Jan 21</td>
<td></td>
</tr>
<tr>
<td>B) Presentation and Workshop - Challenges</td>
<td>15</td>
<td>Feb 2</td>
<td></td>
</tr>
<tr>
<td>C) Final Presentation - Policy and Planning</td>
<td>25</td>
<td>Mar 2 + 4</td>
<td></td>
</tr>
</tbody>
</table>

| Assignment 2 (teams) | Facilitated Discussion | 30 | ongoing |

| Assignment 3 (individual) | Synthesis Matrix | 25 | Apl 15 |

100

* Final mark subject to instructor discretion

DELIVERABLES (COMPONENT DETAILS)

Assignment 1 - Resilient Cities:
The 100 Resilient Cities was an initiative pioneered by the Rockefeller Foundation:
- [https://www.rockefellerfoundation.org/100-resilient-cities/](https://www.rockefellerfoundation.org/100-resilient-cities/)
- [https://www.rockefellerfoundation.org/blog/the-first-100/](https://www.rockefellerfoundation.org/blog/the-first-100/)

The purpose was to help cities around the globe become better adapted, or more resilient, to the physical, social and economic challenges of the 21st century. The program ended in 2019, but some support remains (namely around funds for chief resilience officers).

In groups (4 groups, 4 students /group), compare and contrast the challenges and policy/ planning approaches of two cities that participated in the 100 Resilient Cities initiative.

You will be pre-assigned a group (/ city that participated in the 100 Resilient Cities initiative).

In your assigned group, choose another city that was part of the 100 Resilient Cities program (a list is provided in eClass). Select a city that:
- is NOT highlighted in yellow on the list (these are already selected!)
- is on a different continent
- has similar stressors/ impacts
- has a similar population
- has useful strategic planning/ policy information publicly available online

Be mindful when you choose your second city, as there needs to be something to compare/ contrast between the two cities (and a sufficient amount of material to support for research and presentation). Also keep in mind language, as not all strategic planning documents will be in English. Consider selecting a city that joined the program during the same wave as your assigned city.
A) Overview of Chosen City:
Each group must submit the following (in paragraph form):
• Group membership (names of group members);
• Name of your cities;
• A description about why your group selected the second city
  • why is this city a compelling comparison to your assigned city;
  • what makes this city particularly interesting to you in general?
• 2 double-spaced pages MAXIMUM

B) Presentation and Workshop - challenges:
Deliver a 10 minute presentation that provides context and illustrates the environmental and/ or social challenges of your two cities. Following, groups will be paired in breakout rooms to further discuss their respective cities.

The presentation must include the following components:
• An overview and context of your two cities;
• A short description about why your group selected the second city; why compare these cities in particular?
• A description of each city's respective environmental/ social challenges (e.g. primary impact(s))

The workshop will serve as an opportunity to further discuss the nature of the challenges affecting each groups’ cities. For instance, discussion will centre around the following themes/ questions:
• what is the most critical challenge at this time (has this alway been a challenge, why getting worse now)?
• are decision-makers in a good position to cope with this challenge?
• is it the same challenge for both cities in each respective group?

NOTE: Groups are required to provide the instructor with a digital copy of their facilitated discussion (including speaking notes).

C) Final Presentation - policy and planning:
Deliver a 30 minute presentation that investigates and assesses the environmental and/ or social challenges and responses of your two cities.

The presentation must include the following components:
• A high-level recap/ reminder of each city’s respective environmental/ social challenges (e.g. primary impact(s));
• A discussion of what each city is doing, from a planning perspective, to overcome the challenges;
• Compare and contrast the challenges and policy/ planning approaches of the two cities.
• Provide an assessment of the respective city’s approach/ effectiveness of their strategies (what would your group do differently, from a planning perspective?).
• From the perspective of Resilience Theory (Agents, Institutions, Systems), what are some of the challenging and enabling factors influencing the selected cities (are they the same for both cities). What might this mean for the cities moving forward?

NOTE: Groups are required to provide the instructor with a digital copy of their facilitated discussion (including speaking notes).

A sample Final presentation will be provided via eClass.

Assignment 2 - Facilitated Discussion:
In groups of 2-3 students (7 groups total), lead a facilitated class discussion/ activity based on themes in the assigned readings.

Each facilitated discussion must last 1 hour, after which, the professor will take 10 minutes to ask follow-up questions. The facilitated discussion does not necessarily have to link with that week’s lecture theme, however it should relate back to the course in general.

During the facilitated discussion, the group should introduce the articles, provide a summary of key concepts/ themes, as relevant to your discussion; and, come up with questions and an immersive activity that will keep the conversation going for the duration of the session.
The intent of the facilitated discussion is to stimulate thought and discourse on the human dimensions of environmental change, risk and vulnerability, and to explore what decision-makers/ governments can do (or should do) to improve resilience. With this in mind, use the assigned articles as TOOLS to develop your facilitated discussion… in other words, use them to inspire your facilitated discussion, rather than simply making the facilitated discussion about the articles.

NOTE: Groups are required to provide the instructor with a digital copy of their facilitated discussion (including speaking notes).

A sample Facilitated Discussion will be provided via eClass.

**Assignment 3 - Synthesis Matrix:**
Choose an aspect of climate change resilience planning (defined broadly, could relate to physical or social aspects) and develop a synthesis matrix. The process for developing a synthesis matrix will be explained in class.
- Include at least 10 peer reviewed articles, 5 of which may be from the course Required Readings list.

Further details will be provided in class.

**GRADING RUBRICS**

**Presentations (including facilitated discussions):**

<table>
<thead>
<tr>
<th>Trait</th>
<th>Criteria</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Style/ Delivery</td>
<td>Organization (sensible layout, balance); Clear progression of thought/ logic (are arguments clearly laid out?). Did they use figures/ tables effectively? Were the slides effective? Did they make good use of their team? Was the flow too slow or too fast, or choppy? Were they clear, or were they too quiet? Did they read the presentation, or was there good eye contact?</td>
<td>4</td>
</tr>
<tr>
<td>Content</td>
<td>Focus/ details (have they met the brief? See most current syllabus for assignment requirements); Was the content unique? Was the content appropriate? Did they seem to understand their content? Was there enough content to make their case?</td>
<td>5</td>
</tr>
<tr>
<td>Preparedness</td>
<td>Timing (start on time?). Were they confident?</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL MARKS</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

**Submitted assignments (including written assignments):**

<table>
<thead>
<tr>
<th>Trait</th>
<th>Criteria</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Style/ Delivery</td>
<td>Organization (sensible layout, balance); Clear progression of thought/ logic (are arguments clearly laid out?)</td>
<td>4</td>
</tr>
<tr>
<td>Content</td>
<td>Focus/ details (have they met the brief? See most current syllabus for assignment requirements); Is the content well thought out, creative?; comprehension (is understanding of the material clear?)</td>
<td>4</td>
</tr>
<tr>
<td>Mechanics</td>
<td>Sentence structure, grammar, spelling, word choice (is the assignment in good form?); basic document features (name, course, assignment title, date, page numbers)</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL MARKS</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

**Late assignment:**
Late assignments will be penalized at the rate of 10% per day (including weekends). Extensions may be granted in extenuating circumstances. Please be aware that no work will be accepted for evaluation after
the last day of classes. Be aware that unexcused absences will result in partial or total loss of grade for the participation component of the course, as well as for any assignments that are not handed-in or completed as a result.

Missed Term Exams and Assignments:
For an excused absence where the cause is religious belief, a student must contact the instructor(s) within two weeks of the start of Fall or Winter classes to request accommodation for the term (including the final exam, where relevant). Instructors may request adequate documentation to substantiate the student request.

A student who cannot write a term examination or complete a term assignment due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for (a deferred midterm examination, deferral of the weight of the missed term work/exam to other term work, term exam and/or the final exam, extension of time to complete an assignment, make-up laboratory [if offered in this course], etc.). In all cases, instructors may request adequate documentation to substantiate the reason for the absence at their discretion.

Deferral of term work is a privilege and not a right; there is no guarantee that a deferral will be granted. Misrepresentation of Facts to gain a deferral is a serious breach of the Code of Student Behaviour.

Grade Evaluation:
All assignments and examinations in this course will be given a numerical mark. A cumulative course mark will be calculated from those scores, weighted as tabulated above. Note that the standard letter grading system will be used for the final evaluation of course performance. The grading system will be applied using a combination of absolute achievement and relative standing in the class. Grades are unofficial until approved by the Faculty offering the course.

The following conversion for % to a letter grade will be used:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Descriptor</th>
<th>Letter Grade</th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>Excellent</td>
<td>A+</td>
<td>4.0</td>
</tr>
<tr>
<td>85-89</td>
<td></td>
<td>A</td>
<td>4.0</td>
</tr>
<tr>
<td>80-84</td>
<td></td>
<td>A-</td>
<td>3.7</td>
</tr>
<tr>
<td>77-79</td>
<td>Good</td>
<td>B+</td>
<td>3.3</td>
</tr>
<tr>
<td>74-76</td>
<td></td>
<td>B</td>
<td>3.0</td>
</tr>
<tr>
<td>70-73</td>
<td>Satisfactory</td>
<td>B-</td>
<td>2.7</td>
</tr>
<tr>
<td>66-69</td>
<td></td>
<td>C+</td>
<td>2.3</td>
</tr>
<tr>
<td>62-65</td>
<td>Failure</td>
<td>C</td>
<td>2.0</td>
</tr>
<tr>
<td>58-61</td>
<td></td>
<td>C-</td>
<td>1.7</td>
</tr>
<tr>
<td>54-57</td>
<td></td>
<td>D+</td>
<td>1.3</td>
</tr>
<tr>
<td>50-53</td>
<td></td>
<td>D</td>
<td>1.0</td>
</tr>
<tr>
<td>0-49</td>
<td></td>
<td>F</td>
<td>0.0</td>
</tr>
</tbody>
</table>

STUDENT RESPONSIBILITIES
Academic Integrity:
"The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.governance.ualberta.ca) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University."

All forms of dishonesty are unacceptable at the University. All forms of academic dishonesty are unacceptable at the University. Any suspected offence will be reported to the Faculty of Science. Anyone who is found in violation of the Code of Student Behaviour may receive a sanction. Typical sanctions include conduct probation, a mark reduction or a mark of 0 on an assessment, a grade reduction or a grade of F in a course, a remark on the transcript, and a recommendation for suspension or expulsion.

Plagiarism and Cheating:
"All students should consult the “Truth-In-Education” handbook or Website (http://www.uofaweb.ualberta.ca/TIE/) regarding the definitions of plagiarism and its consequences when detected. Students involved in language courses and translation courses should be aware that on-line “translation engines” produce very dubious and unreliable “translations.” Students in language courses should be aware that, while seeking the advice of native or expert speakers is often helpful, excessive editorial and creative help in assignments is considered a form of “cheating” that violates the code of student conduct with dire consequences. An instructor or coordinator who is convinced that a student has handed in work that he or she could not possibly reproduce without outside assistance is obliged, out of consideration of fairness to other students, to report the case to the Associate Dean of the Faculty. Before unpleasantness occurs consult http://www.uofaweb.ualberta.ca/TIE/; also discuss this matter with any tutor(s) and with your instructor.

Exams:
Your student photo I.D. is required at exams to verify your identity. Students will not be allowed to begin an examination after it has been in progress for 30 minutes. Students must remain in the exam room until at least 30 minutes has elapsed.

Cell Phones:
Cell phones are to be turned off during lectures, labs and seminars. Cell phones are not to be brought to exams.

STUDENTS ELIGIBLE FOR ACCESSIBILITY-RELATED ACCOMMODATIONS (students registered with Accessibility Resources - AR): Eligible students have both rights and responsibilities with regard to accessibility-related accommodations. Consequently, scheduling exam accommodations in accordance with AR deadlines and procedures is essential. Please note adherence to procedures and deadlines is required for U of A to provide accommodations. Contact AR (www.ualberta.ca/current-students/student-accessibility-services) for further information.

Academic Success Centre:
(1-80 SUB) (formerly the Student Success Centre): The Academic Success Centre (www.ualberta.ca/current-students/academic-success-centre) provides professional academic support to help students strengthen their academic skills and achieve their academic goals. Individual advising, appointments, and group workshops are available year round in the areas of Accessibility, Communication, Learning, and Writing Resources. Modest fees apply for some services.

Recording and/or Distribution of Course Materials:
Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Policy about course outlines can be found in the University Calendar (https://calendar.ualberta.ca/content.php?catoid=29&navoid=7238#Evaluation_Procedures_and_Grading_System).
Access to Evaluative Material Procedure:
Following an evaluation, students may be given access to past or representative evaluative course material, consistent with the Access to Evaluative Material Procedure of the Assessment Policy, found at the University of Alberta Policies and Procedures Online (UAPPOL) (https://policiesonline.ualberta.ca).

Students with disabilities:
Students who require accommodation in this course due to a disability are advised to discuss their needs with Specialized Support & Disability Services (2-800 Students' Union Building).

Territorial Statement:
“The University of Alberta acknowledges that we are located on Treaty 6 territory, and respects the histories, languages, and cultures of the First Nations, Métis, Inuit, and all First Peoples of Canada, whose presence continues to enrich our vibrant community.”

PROFESSIONAL PLANNING ACCREDITATION REQUIREMENTS
PLAN 500 is a graduate course in the MSc in Planning program. For students enrolled in this program, this course contributes to developing the knowledge and skills identified by Canadian Institute of Planners (CIP) as necessary competencies for practice as a professional planner. This course provides an introduction to all of the components as identified by the CIP, however the following are emphasized:

Functional competencies:
• Human Settlements
  • Forms, scales and settings of human settlements; Processes and factors of change in human settlements
• History & Principles of Planning
  • Planning theories, principles and practice; New developments in planning
• Issues in Planning and Policy-making
  • Environmental, social and economic sustainability; Land use design and infrastructure
• Processes of Planning and Policy-making
  • Visioning, goal-setting and problem solving; Information gathering and analysis

Enabling competencies:
• Critical and Creative Thinking
  • Thinking a various geographic scales
• Social Interaction and Leadership
  • Inclusion of diverse people and values
• Communication
  • Written communication; Oral communication; Graphic communication
• Professionalism
  • Learning from practice

Disclaimer:
Any typographical errors in this Course Outline are subject to change and will be announced in class. The date of the final examination is set by the Registrar and takes precedence over the final examination date reported in this syllabus.

Copyright:
Dr. Jeff Birchall, Department of Earth and Atmospheric Sciences, Faculty of Science, University of Alberta (2021)

Last updated: December 29, 2020