Course Number | PLAN 548A
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Course Credit(s) | 3
Course Title | Current Issues in Planning: Transportation Emissions and Air Quality
Term | 2018-2019 Winter Term 2
Day/Time | Monday/Wednesday

Instructor | Alexander Bigazzi
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Office Hours | By appointment

**Short Course Description**
This course addresses the emission of air pollution from transportation systems, and related impacts on local and global air quality. There are no prerequisites.

**Course Format**
This course is primarily lecture-based. There will be homework assignments, in-class exams, and a term project.

**Course Overview, Content and Objectives**
This course addresses the emission of air pollution from transportation systems, and related impacts on local and global air quality. Transportation-related air pollutants will be characterized and differences in emission levels by mode of travel and technology (e.g. vehicle and fuel types) will be discussed and analyzed. Methods of modeling emissions from transportation facilities will be presented, along with emission-related regulatory requirements for transportation projects. Technology, economic, and policy aspects of controlling pollution emissions from the transportation sector will also be discussed.

**Learning Outcomes**
After completing this course, students will be able to:
1. Identify the main classes of traffic-related air pollutants, including:
   a. how there are generated from the transport sector
   b. how they are regulated for the transport sector in the US
2. Predict the general expected emissions (and air quality) effects of changes in transportation system conditions (fuels, vehicles, traffic flow, etc.)
3. Propose relevant emissions mitigation strategies for transportation projects
4. Identify emissions model types: typical inputs and outputs, assumptions, scale of application, uncertainty, etc.
5. Execute emissions model runs in the MOVES model from the US Environmental Protection Agency (prepare input data and process output)
6. Critically evaluate an emissions/air quality analysis performed by others (such as part of an Environmental Impact Statement)
Additional Course Requirements
N/A

Attendance
Attendance is strongly encouraged. If you miss a class session, it is your responsibility to check Connect for any materials and to check with a classmate for any announcements or other information not posted on Connect. All students must take the final exam to pass the class.

Evaluation Criteria and Grading
Final course percentage grades will be calculated using the following approximate weights (subject to change until the first day of class – see syllabus on Connect): Assignments (20%), Exam (25%), Modeling project (30%), Term paper (25%). Final course letter grades will be assigned as indicated on the UBC website: http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,42,96,0

Required Readings and Videos
None – readings will be posted on Connect

Recommended Readings

Course Schedule
This schedule is tentative; please see syllabus on Connect.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Course introduction, course scope and overview</td>
</tr>
<tr>
<td>2</td>
<td>MOVES model training and lab</td>
</tr>
<tr>
<td>3</td>
<td>Processes: pollutants&lt;br&gt;Processes: emissions rates</td>
</tr>
<tr>
<td>5</td>
<td>Control: overview &amp; technology</td>
</tr>
<tr>
<td>6</td>
<td>Control: vehicle &amp; travel management</td>
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<tr>
<td>7</td>
<td>Control: regulation of fuels &amp; vehicles</td>
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<tr>
<td>8</td>
<td>No class – mid-term break</td>
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<tr>
<td>9</td>
<td>Control: regulation of projects and plans&lt;br&gt;Continue previous topics &amp; Review</td>
</tr>
<tr>
<td>10</td>
<td>Modeling: model scales &amp; types</td>
</tr>
<tr>
<td>11</td>
<td>Modeling: input &amp; test data</td>
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</tbody>
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Special Needs

Academic Integrity
Assistance with the creation of a course syllabus is available through the Centre for Teaching, Learning and Technology, www.ctlt.ubc.ca Resources related to the development of assessable learning outcomes can be accessed through http://ctlt.ubc.ca/resources/webliography/course-designdevelopment/ The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President’s Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.
A more detailed description of academic integrity, including the University's policies and procedures, may be found in the Academic Calendar at http://calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,0.