CIVE 295 – Building Science Fundamentals

Term – Summer 2016 (201605)

Instructor
Dr. Phalguni Mukhopadhyay
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E-mail: phalguni@uvic.ca

Office Hours
Days: Wednesday & Friday
Time: By Appointment Only
Location: ECS 318

List all prerequisites and co-requisites: MATH 101

LECTURE DATE(S)
Section: A / CRN30118
Days: Tuesday, Wednesday, Friday
Time: 9:30 am - 10:20 am
Location: Engineering Comp Science Bldg 108

TUTORIAL SECTIONS
Section: T / CRN30119
Days: Wednesday
Time: 4:00 pm - 4:50 pm
Location: Engineering Comp Science Bldg 104

TA Name
Gagandeep Pahwa
Sunil Kumar Prajapati
E-mail
gaganp@uvic.ca
sunil45@uvic.ca
Office

Required Text
Title: Building Science: Concepts and Application
Author: Jens Pohl
Publisher/Year: John Wiley & Sons, Inc./2011

Optional Text
Building Science for a Cold Climate
Neil B. Hutcheon, Gustav O. P. Handegord
National Research Council Canada/1983

Reference Materials:

COURSE OBJECTIVES: Verbos description of the material being covered in the course. How does the course build/relate to other courses in the program.

This course will cover following topics:

Kinetic theory; gas laws; work and heat; laws of thermodynamics; heat transfer by conduction, convection and radiation; mass transfer; fluids in motion; air and moisture content; air flow; ventilation; weather data; hygrothermal response of building materials.

The materials covered in this course are the fundamentals to sustainable building envelope design included in CIVE 450 (Green Building Design).
LEARNING OUTCOMES: At the end of this course, students will be able to: (1) relate the kinetics of matters, gas laws and climatic factors with the hygrothermal performance of built environment, (2) use the principles of heat-air-moisture transport through building envelope materials and systems and do the basic design calculations for hygrothermal performance of building materials, (3) identify and apply important boundary conditions and driving forces for hygrothermal loading on exterior building envelopes, (4) identify basic hygrothermal properties of building materials and measurement techniques, and do the required calculations, and (5) apply the heat-air-moisture transport fundamentals for sustainable and energy efficient building envelope design.

Weight & Date(s) of Assessments:  

<table>
<thead>
<tr>
<th>Weight</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments:</td>
<td>20 %</td>
</tr>
<tr>
<td>Mid-term</td>
<td>40 %</td>
</tr>
<tr>
<td>Final Exam</td>
<td>40 %</td>
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</tbody>
</table>

ASSIGNMENTS

Four assignment sets will be distributed over the course of the term via the CIVE 295 Course Space site. The assignment problems will be mix of theories and problems. Students are required to work independently on each assignment. Assignment hardcopy submissions are to be made to the CIVE 295 dropbox.

<table>
<thead>
<tr>
<th>Assignment #</th>
<th>Modules</th>
<th>Start</th>
<th>Due (5 pm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kinetic theory; gas laws; work and heat; laws of thermodynamics; heat transfer</td>
<td>20/05</td>
<td>31/05</td>
</tr>
<tr>
<td>2</td>
<td>Heat transfer</td>
<td>10/06</td>
<td>21/06</td>
</tr>
<tr>
<td>3</td>
<td>Mass transfer; fluids in motion</td>
<td>28/06</td>
<td>12/07</td>
</tr>
<tr>
<td>4</td>
<td>Air and moisture content; air flow; ventilation; weather data</td>
<td>15/07</td>
<td>26/07</td>
</tr>
</tbody>
</table>

NOTE:

- Failure to pass the final exam will result in a failing grade for the course.
- 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.

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.

Assignment of E grade and supplemental examination for this course will be at the discretion of the Course Instructor. The rules for supplemental examinations can be found in the current Undergraduate Calendar.

GENERAL INFORMATION

Note to Students:

Students who have issues with the conduct 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....

Updated April 2016
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, (2015) http://web.uvic.ca/calendar2015-09/FACS/UnIn/UARe/Atte.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/calendar2015-09/FACS/UnIn/UARe/PoAcI.html

Accommodation of Religious Observance (AC1210)
http://web.uvic.ca/calendar2015-09/GI/GUPo.html

Discrimination and Harassment Policy (GV0205)
http://web.uvic.ca/calendar2015-09/GI/GUPo.html

Updated April 2016