COURSE CALENDAR DESCRIPTION
This course covers the fundamentals of heat transfer and thermodynamics, the methods and tools for thermal control and design, and their application in space engineering. Prerequisites: SC/MATH 2271 3.00; SC/CHEM 1100 4.00; SC/PHYS 1801 3.00.

INSTRUCTOR(S)

<table>
<thead>
<tr>
<th>Name</th>
<th>Section / Format / Term</th>
<th>Contact Email</th>
<th>Contact Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chesser, Hugh</td>
<td>Sec. A / LECT / F</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ADDITIONAL INFORMATION

TOPICS AND CONCEPTS
The course covers the theory heat conduction and radiation problem in steady and unsteady conditions. The concepts are then applied to examine the design of spacecraft thermal control systems. Thermal design analysis techniques and devices such as heatpipes, thermoelectric coolers and thermostats are explored. Students will learn the use of software tools such as TMG to evaluate the performance of a thermal control subsystem.

COURSE SYLLABUS
The course is a single semester with lectures and associated tutorials divided roughly equally into 4 sections:
1. Heat conduction – applying theory to solve simple 1-d and 2-d problems. Electrical network analogy and the use of the finite difference method to solve more complicated problems is studied.
2. Heat radiation – viewfactor calculations, radiation network analogies
3. Spacecraft thermal devices – Specific spacecraft thermal control devices such as heatpipes, thermoelectric coolers, etc.
4. Spacecraft design and test – software tools such as TMG are introduced. Design and test methods are covered.

COURSE OVERVIEW
Proper thermal design is important to the success of a spacecraft. Many issues relate to reliability and performance of spacecraft devices are linked to their operating and non-operating temperatures that they experience onboard the spacecraft. This course provides you with the experience to understand, analyze and test whether your thermal design will function adequately on orbit.

GRADED ASSESSMENT
Student achievement is assessed based on quizzes, midterm an analysis assignment and a final exam.
MARKS
Quizzes – 20%
Midterm – 20%
Assignment – 10%
Exam – 50%

TEXTBOOKS

ACADEMIC INTEGRITY LINKS
• Senate Policy on Academic Honesty - http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/
• Academic Integrity - http://lassonde.yorku.ca/academic-integrity

STUDENT LINKS
• Student Rights and Responsibilities - http://oscr.students.uit.yorku.ca/student-conduct
• Religious Observance - https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/wa/regobs
• Academic Accommodation for Students with Disabilities - http://secretariat-policies.info.yorku.ca/policies/academic-accommodation-for-students-with-disabilities-policy/
• Counselling and Disability Services - http://cds.info.yorku.ca/
• York University’s Policies on Sexual Violence - http://secretariat-policies.info.yorku.ca/policies/sexual-violence-policy-on/
• York University’s Policies on Gender/LGBTQ*/Positive Space - http://rights.info.yorku.ca/lgbtq/

LAND ACKNOWLEDGEMENT
• We acknowledge our presence on the traditional territory of many Indigenous Nations. The area known as Tkaronto has been care taken by the Anishinabek Nation, the Haudenosaunee Confederacy, the Huron-Wendat, and the Métis. It is now home to many Indigenous Peoples. We acknowledge the current treaty holders, the Mississaugas of the New Credit First Nation. This territory is subject of the Dish With One Spoon Wampum Belt Covenant, an agreement to peaceably share and care for the Great Lakes region.
• The Indigenous Framework for York University: A Guide to Action can be found here: http://indigenous.info.yorku.ca/
• Meaning of a land acknowledgement: http://healthydebate.ca/opinions/indigenous-land-acknowledgements

Many courses utilize Moodle, York University’s course website system. If your course is using Moodle, click here to access it.
Moodle @ York University