Introduces methodology for mechanical design of components. It discusses topics including design for static and dynamic loads, failure analysis, fatigue, component design and selection for materials and machine elements, e.g. threaded joints, springs, gears, belt, chain, bearings, etc. Prerequisites: LE/MECH 2301 3.00, LE/MECH 2401 3.00. Course Credit Exclusion: LE/MECH 2409 3.00

INSTRUCTOR(S)

<table>
<thead>
<tr>
<th>Name</th>
<th>Section / Format / Term</th>
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<tr>
<td>Rizvi, Reza</td>
<td>Sec. A / LECT / F</td>
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ADDITIONAL INFORMATION

Required Course Materials

Course Website
LE / MECH 3409 on http://moodle.yorku.ca

Course Description
This course introduces methodology for mechanical design of components. It discusses topics including design for static and dynamic loads, failure analysis, fatigue, component design and selection for materials and machine elements, e.g. shafts, threaded joints, springs, bearings, gears, etc.

Course Learning Outcomes (CLOs)
Upon the completion of this course, students are expected to learn and retain the following concepts and skills:
1. Apply the fundamentals of stress analysis, theories of failure and material science in the design of machine components (fasteners, gears, shafts, springs, bearings, etc.).
2. Analyze the various elements of a machine followed by the appropriate selection of suitable components from manufacturers’ catalogues and apply codes and standards to machine component design.
3. Understand the design and analysis of actual machine components under cyclic loading and local stress concentration including prediction of their life and failure.
4. Prepare detailed engineering drawings using computer aided design (CAD) software for machine elements design assignments and group project.
5. Work as a team member on the group design project and ability to professionally present the final design and project report.
6. Demonstrate the ability to take technical, safety, and other issues (such as environmental) into account when selecting and/or designing mechanical components.

**Evaluation Scheme**
- Take-home assignments (3 x 5%): 15%
- In-Tutorial assignments (3 x 2%): 6%
- Tutorial participation (8 x 0.5%): 4%
- Group Project: 30%
- Midterm Exam: 20%
- Final Exam: 25%

**Grading**
The grading scheme for the course conforms to the 9-point grading system used in undergraduate programs at York (e.g., A+ = 9, A = 8, B+ = 7, B = 6, etc.). Assignments and tests will bear either a letter grade designation or a corresponding number grade (e.g., A+ = 90 to 100, A = 80 to 90, B+ = 75 to 79, etc.).

(For a full description of York grading system see the York University Undergraduate Calendar - https://calendars.students.yorku.ca/2018-2019/academic-and-financial-information/academic-information/grades-and-grading-schemes)

**Assignment Submission**
Proper academic performance depends on students doing their work not only well, but on time. Accordingly, assignments for this course must be received on the due date specified for the assignment. Assignments are to be handed in during lectures, tutorials, or through the course Moodle site as specified by the respective instructions.

**Lateness Penalty**
Assignments received later than the due date will be penalized (i.e., 20% deduction per day that assignment is late). Exceptions to the lateness penalty for valid reasons such as illness, compassionate grounds, etc., may be entertained by the Course Instructor but will require supporting documentation (e.g., a doctor’s letter).

**Missed Tests**
Students with a documented reason for missing a course test, such as illness, compassionate grounds, etc., which is confirmed by supporting documentation (e.g., doctor’s letter) may request accommodation from the Course Instructor on a case-by-case arrangement. Further extensions or accommodation will require students to submit a formal petition to the Faculty.

For missed exams or final assignments, students are expected to fill out the deferred exam form (https://secure.students.yorku.ca/pdf/final-exam-assignment-deferred-standing-agreement.pdf).

Please note that Senate policy states that “normally, requests for deferred standing must be communicated within one week following a missed examination or the last day to submit course work”. The period during which the University is officially closed for December holidays and statutory holidays is not counted in the determination of deadline days.

**Classroom Etiquette**
The use of electronic devices (smart-phones, tablets, etc.) during lectures and tutorials is **only permitted for education purposes**.

**NETiquette**
In all online communications (e.g., email, online discussion, or other forms of online communications), please consider the guidelines from the Core Rules of Netiquette by Virginia Shea (http://www.albion.com/netiquette/corerules.html). Sometimes, online behaviour can appear to be inappropriate or disrespectful that it requires attention and follow up. In this case, please make sure you let your instructor know immediately so that the right resources can be identified to help.

- **Reminders**
  
  - If you are using a personal e-mail address, please identify yourself as a student registered in this course by providing your student number in your signature block. You are responsible for ensuring you are receiving official course information in an efficient and timely manner.
  
  - All students are expected to familiarize themselves with the following information:
    - General information (http://calendars.registrar.yorku.ca/2013-2014/policies/index.htm)
    - Senate policy on academic honesty and the academic integrity website (http://www.yorku.ca/secretariat/policies/document.php?document=69) and (http://www.yorku.ca/tutorial/academic_integrity/)
    - Academic Integrity - http://lassonde.yorku.ca/academic-integrity
    - Copyright - Course materials are designed for use only in the course. Copying this material for distribution (e.g. uploading material to a commercial third-party website) may lead to a charge of misconduct under York’s Code of Student Rights and Responsibilities and the Senate Policy on Academic Honesty and/or legal consequences if copyright law has been violated http://www.copyright.info.yorku.ca.
    - Ethics review process for research involving human participants (http://www.yorku.ca/research/support/ethics/)
    - Course requirement accommodation for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities (http://www.yorku.ca/secretariat/policies/document.php?document=68)
    - Additional resources related to add/drop courses, student life, academic resources, campus services, …etc. can be found at this link: http://www.yorku.ca/yorkweb/cs.htm

- **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
  - Counselling and Disability Services - http://cds.info.yorku.ca/
  - York University’s Policies on Gender/LGBTQ*/Positive Space - http://rights.info.yorku.ca/lgbtq/

- **Land Acknowledgement**
  
  - As this meeting is virtual and we are not all gathered in the same space, I recognize that this land acknowledgment might not be for the territory that you are currently on. We ask that if this is the case, you take the responsibility to acknowledge the traditional territory you are on and the current treaty holders. As a member of the York University community, I recognize that many Indigenous Nations have longstanding relationships with the territories upon which York University campuses are located that precede the establishment of York University. York University acknowledges its 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, and the Huron-Wendat. It is now home to many First Nation, Inuit and Métis communities. We acknowledge the current treaty holders, the Mississaugas of the 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