COURSE CALENDAR DESCRIPTION

Basic principles of finite element method, variational and weighed residual principle procedures in discretizing and building up governing equations of physical models. Use of industrial FEM codes to understand model response to external effects such as stress, heat, vibration, and fluids. Prerequisites: SC/MATH 1025 3.00; SC/MATH 2015 3.00; SC/MATH 2271 3.00; SC/PHYS 1800 3.00 and SC/PHYS 1801 3.00 or SC/PHYS 1010 6.00; LE/ESSE 2470 3.00.

INSTRUCTOR(S)

<table>
<thead>
<tr>
<th>Name</th>
<th>Section / Format / Term</th>
<th>Contact Email</th>
<th>Contact Phone</th>
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<tbody>
<tr>
<td>Vukovich, George</td>
<td>Sec. M / LECT / W</td>
<td><a href="mailto:vukovich@yorku.ca">vukovich@yorku.ca</a></td>
<td>York Ext. 30090</td>
</tr>
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ADDITIONAL INFORMATION

Content:

Topics covered:
1. Calculus of Variations
2. Strong, weak and weighted residual forms
3. Approximate solution via the Raleigh-Ritz and Galerkin methods
4. Formulation of finite elements
5. 1-D linear and higher order shape functions
6. Element stiffness and force
7. Assembly
8. Fourth order problems – Beams
9. 2-D scalar field problems
10. Triangular and rectangular elements
11. Accuracy refinements

- Much of the first part of the course will be based on an axially loaded bar subject to various boundary and loading conditions.

Evaluation:

2 Midterms worth 15% each
Problem Sets worth 10%
Final Exam of 60%.

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
- Counselling and Disability Services - http://cds.info.yorku.ca/

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