

Applied Mathematics 4613b :- Winter 2015

FINITE ELEMENT METHODS

Course Outline

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Text: Finite Elements: A Gentle Introduction
David Henwood and Javier Bonet
MacMillan Press Ltd. (1996)
isbn: 0-333-64626-6 (required)

Other useful texts: (Do not buy these texts)

Introduction to the Finite Element Method: Theory, Programming and Applications
Erik G. Thompson
John Wiley and Sons, Inc. (2005) isbn: 0-471-26753-8

The Finite Element Method in Mechanical Design
Charles E. Knight
PWS-Kent Publishing Company (1993) isbn: 0-534-93187-1

Evaluation: Assignments: 35%
Quizzes: 45% (3, done in class)
Final Project: 20% (Due by the end of the Exam Period, Details to follow.)

Summary of Topics:

0. Introduction and Disclaimers
1. Finite elements introduced as bars forming a truss
2. Some mathematical aspects
3. Towards a systematic method
4. The matrix approach
5. Two-dimensional heat flow
6. Variational form ****
7. The Galerkin approach ****
8. Element computation ****
10. Other topics not in the main text book

Addendum to all Applied Mathematics Course Outlines:

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to your faculty's Dean's Office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from your faculty's Dean's Office immediately.

For further information please see: <http://studentservices.uwo.ca/secure/index.cfm>

A student requiring academic accommodation due to illness, should use the Student Medical Certificate when visiting an off-campus medical facility or request a Records Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found here:

https://studentservices.uwo.ca/secure/medical_document.pdf

Mental Health Statement:

Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

Accessibility:

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 ext. 82147 if you have questions regarding accommodation.

Support Services:

Learning-skills counselors at the Student Development Centre (<http://www.sdc.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counseling.

Additional student-run support services are offered by the USC, <http://westernusc.ca/services>.

The website for Registrarial Services is <http://www.registrar.uwo.ca>.