

ISC 5935 - Selected Topics in Scientific Computing
Scientific Computing with Deal.II
Summer 2016

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Website:	http://www.sc.fsu.edu/~jburkardt/classes/sc.2016/sc.2016.html
Time:	Tuesday/Thursday, 1:00-2:15, 499 DSL

Course Description: This 3-credit course presents the DEAL.ii program, a package which uses the finite element method to model, simulate, and analyze physical problems that can be represented by systems of partial differential equations.

The course is not simply about the DEAL.ii program; it also considers general problems of scientific software development, such as the use of Eclipse, an IDE (Integrated Development Environment), the graphics packages Visit and ParaView, and the Doxygen documentation tool.

While the mathematical derivation and justification of the finite element method are not presented, there are numerous discussion of issues that arise in general finite element programming, including the creation and adaptive modification of meshes, the treatment of boundary conditions, and the handling of linear algebra.

The course will rely heavily on videotaped lectures, prepared by Professor Wolfgang Bangerth of Texas A&M University.

Students will have a number of assignments to carry out involving finite element calculations.

Course Objectives: Students will be able to:

- use DEAL.ii to set up and solve finite element problems;
- use modern software tools for code development;

Grading: The student's grade for the course will be based upon:

- $\frac{1}{3}$: Attendance;
- $\frac{1}{3}$: Assignments;
- $\frac{1}{3}$: Final project.

University Attendance Policy: Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor Policy: The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of student's academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to . . . be honest and truthful and . . . [to] strive for personal and institutional integrity at Florida State University. (Florida State University Academic Honor Policy, found at <http://academichonor.fsu.edu/policy/policy.html>.)

Americans with Disabilities Act Students with disabilities needing academic accommodation should:

- register with and provide documentation to the Student Disability Resource Center; and
- bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact the Student Disability Resource Center, sdrc@admin.fsu.edu, web page: <http://www.disabilitycenter.fsu.edu/>.

Syllabus Change Policy Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.