Course Description: In the practicum course, students are expected to show their abilities and knowledge by working on an ambitious project in computational science, with the results presented as a formal written report, and an oral presentation.

The practicum is a course that is required for graduation in the department. It is normally taken in the spring semester of the senior year.

For this course, the instructor of record plays a supervisory role. The student should meet with the instructor to discuss the purpose of the practicum, and to consider appropriate faculty mentors. Once a mentor has been chosen, the instructor should ensure that the practicum timeline is followed, and should receive copies of the proposal, drafts, and final report from the mentor.

The mentor’s responsibility is to provide guidance for the student in choosing a project, helping to develop a solution strategy, and reviewing and grading the written work of the student in order to ensure that professional writing standards are achieved.

Together, the student and mentor agree on a suitable project, a series of intermediate goals, and a timeline. The student is responsible for writing this proposal up as a formal document. Thereafter, the student works independently except for regularly scheduled meetings with the mentor. At these meetings, the mentor will help the student with difficulties arising in the project. Over the period of the course, the student will submit two drafts and then a final report, which the mentor will review, edit, and return to the student for revision.

Completing the practicum requires writing the project proposal, carrying out the proposed project work, submitting the two drafts and final report, and making a final oral presentation.

This course may be repeated to a maximum of six semester hours, with a maximum of only three semester hours credit allowed to be applied to the Computational Science degree.

Prerequisites: Senior standing (90+ hours).

Course Objectives: By the end of this course, students will demonstrate the ability to:

- create and adhere to a research proposal and its timelines;
- carry out a substantial project in computational science;
- write and repeatedly revise a project report so that it adheres to professional standards in format and content;
- make an oral presentation of results similar to a short conference talk.

Moreover, in fulfillment of the Upper Division Writing requirement, the student will demonstrate the ability to:

- Use appropriate evidence from multiple sources to illustrate how a chosen topic is relevant to a particular field.
- Employ different resources (i.e., words and images) to compose within that field.
- Compose as a process, including drafts, revision, and editing.
- Convey ideas clearly, coherently, and effectively for a particular purpose, occasion, or audience.
Final Grade Determination: The grade for the course will be determined as follows:

- Project Proposal - 5%
- Project Work - 50%
- Report Draft 1 - 10% (week 6)
- Report Draft 2 - 10% (week 10)
- Final Report - 15% (week 14)
- Oral Presentation - 10%

Project Work Assessment:
The project work grade is determined by evaluating the extent to which the student has exhibited a professional approach to proposing a project, documenting its progress, implementing the project in software, and clearly and convincingly presenting its results, both in a final report and in an oral presentation. For this portion of the grade, the draft and final reports are judged in terms of their content, that is, the extent to which they succeed in describing the background of the problem area, the purpose and methods of the project, the algorithms and implementation, the numerical results and the conclusions drawn from those results. These are the practical criteria by which the reports of any scientific project are normally judged; further details will naturally vary by project.

Written Work:
A significant portion of the practicum involves developing professional writing skills; the proposal, drafts, and final report are thus intended in part as evidence of these skills, and the ability of the student to attain a professional level of writing ability by the end.

The first item, the project proposal, should be between 3 and 5 pages long. It should begin with an overview of the area of study, followed by a statement about the student’s proposed project, discussing the computational and scientific aspects of the problem, and the goal of the project. Since this is partly a planning document, there should also be a section which analyzes the project as a sequence of milestones, that is, tasks to be carried out, with an approximate timeline for the completion of each. This project proposal should be submitted to the mentor by the end of the second week of the practicum for review, and a revised version should be completed within a week thereafter.

The two draft reports should be between 10 and 20 pages long. The main portion of the report should develop, perhaps in greater detail than the initial proposal, the area of study, the student’s project, and note the details of the algorithms to be implemented, issues of verification and efficiency, as well as benchmarking on test cases. An auxiliary part of the report should detail the student’s progress in completing milestones, and any adjustments to the research plan. These reports should be submitted to the mentor by the sixth and tenth weeks of the semester. The mentor will review the reports and return them to the student for revisions, which should be completed within a week.

The final report is due one week before the last day of classes for the semester. This report should be a self-sufficient document which does not refer to the previous proposal or drafts. It is expected to be written in a professional style and format. It should clearly present an introduction to the area of scientific computing in which the student’s work will be carried out, describe the kind of problems that are to be handled, lay out the student’s thesis which indicates how these problems are to be solved or handled, analyzes the solution procedure in terms of algorithms, discusses the issues involved in implementing the solution procedure in a given computer language, presents a set of test cases which can be used to verify the solution procedure, shows by plots, tables or other means the results of numerical experiments with the test cases, presents some concluding remarks which draw conclusions from the results, followed by a bibliography of works cited during the project.

Upper Division Writing Requirement:
Students are required to demonstrate upper-level language skills through multiple assignments. For the purposes of this requirement, upper-division writing is defined as writing that requires time for reflection
and revision, includes a clearly defined central idea or thesis, provides adequate support for that idea, uses clear and logical organization, adheres to the conventions of standard written language, and is formatted or presented in an appropriate way to the discipline within which it is being taught. This course has been approved as meeting the Liberal Studies requirements for Upper-Division Writing and thus is designed to help you become a flexible and proficient writer for professional purposes. In order to fulfill FSU’s Upper-Division Writing requirement, the student must earn a “C-” or higher in the course, and earn at least a “C-” average on the required writing assignments. If the student does not earn a “C-” average or better on the required writing assignments, the student will not earn an overall grade of “C-” or better in the course, no matter how well the student performs in the remaining portion of the course.

LIBERAL STUDIES FOR THE 21ST CENTURY The Liberal Studies for the 21st Century Program at Florida State University builds an educational foundation that will enable FSU graduates to thrive intellectually and materially and to engage critically and effectively in their communities. In this way your Liberal Studies courses provide a comprehensive intellectual foundation and transformative educational experience; this course has been approved as meeting the Upper-Division Writing requirement, and thus is designed to help you become a clear, creative, and convincing communicator within your discipline.

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 students 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://fda.fsu.edu/Academics/Academic-Honor-Policy.)

Americans With Disabilities Act: Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; and (2) bring a letter to the instructor indicating the need for accommodation and what type.

Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from the Student Disability Resource Center has been provided.

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
874 Traditions Way
108 Student Services Building
Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
sdrc@admin.fsu.edu
http://www.disabilitycenter.fsu.edu/

Free Tutoring from FSU: On-campus tutoring and writing assistance is available for many courses at Florida State University. For more information, visit the Academic Center for Excellence (ACE) Tutoring Services’ comprehensive list of on-campus tutoring options - see http://ace.fsu.edu/tutoring or contact tutor@fsu.edu. High-quality tutoring is available by appointment and on a walk-in basis. These services are offered by tutors.
trained to encourage the highest level of individual academic success while upholding personal academic integrity.

**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.”

**Assessment of Student Achievement of Upper-Division Writing Objectives**
The Upper-Division Writing objectives require that students become flexible and proficient writers for professional purposes. The stated objectives and their assessment methods include:
1. Use appropriate evidence from multiple sources to illustrate how a chosen topic is relevant to a particular field. (Rubric items: Quality of Evidence, Documentation)
2. Employ different resources (such as words, graphs, charts and images) to compose in the field. (Rubric items: Sentence skills, Grammar/mechanics)
3. Compose as a process, including drafts, revision, and editing. (Rubric items: Organization, Paragraph skills, On time)
4. Convey ideas clearly, coherently, and effectively for a particular purpose, occasion, or audience representative as appropriate for the field. (Rubric items: Thesis/main message, Audience and tone)

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**Grading standards for ISC 4943: Practicum in Computational Science**

**Upper Division Technical Writing Requirement**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>A range</th>
<th>B range</th>
<th>C range</th>
<th>D range</th>
<th>F range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thesis/main message</td>
<td>Interesting, memorable, exceptionally original thesis/main message</td>
<td>Clear thesis, main message; reader never has to read any paragraphs twice</td>
<td>There is a thesis, but it is vague, too general, or says little</td>
<td>There is no thesis, or it is unclear or confusing</td>
<td>There is no thesis, or it is very unclear</td>
</tr>
<tr>
<td>Organization</td>
<td>Extremely well organized, logical; easy to follow</td>
<td>Well organized, easy to follow; 1-2 sentences may fall short</td>
<td>Mostly organized, but some points are hard to follow or out of place</td>
<td>Poorly organized, hard to follow; possibly, confusing</td>
<td>Very disorganized, hard to follow; faulty logic or parts missing</td>
</tr>
<tr>
<td>Quality of evidence</td>
<td>Evidence is highly credible and used logically</td>
<td>Evidence is highly credible and used logically but may fall short in 1-2 ways</td>
<td>Evidence is not as credible as an A or B paper or may not be used as logically; author offers opinions with little evidence.</td>
<td>Evidence is lacking, of poor quality, or not used well; author supplies opinions instead.</td>
<td>There is little evidence tied to the thesis</td>
</tr>
<tr>
<td>Paragraph skills</td>
<td>Well developed &amp; organized around one main idea, ideally with a topic sentence; sentences follow logically, and signal/transition phrases are used</td>
<td>Paragraphs may not be as smooth as the A paper but are generally well organized and developed.</td>
<td>Paragraphs may lack a topic sentence and smooth transitions between sentences</td>
<td>In many cases, paragraphs are poorly structured and arranged.</td>
<td>Paragraph skills are severely lacking or nonexistent</td>
</tr>
<tr>
<td>Sentence skills</td>
<td>Sentences are elegant and grammatically perfect</td>
<td>No grammar mistakes; healthy variety of length and structure of sentences</td>
<td>Not much variety in structure or length; a few grammar mistakes</td>
<td>Poorly constructed sentences, many grammar mistakes</td>
<td>Major problems</td>
</tr>
<tr>
<td>Grammar/mechanics</td>
<td>Perfect or nearly so</td>
<td>Only a few problems noticeable.</td>
<td>Some problems appear repeatedly.</td>
<td>Many grammar mistakes</td>
<td>Very poor</td>
</tr>
<tr>
<td>Audience &amp; tone</td>
<td>Shows awareness of</td>
<td>May fall short in 1 or 2 minor ways</td>
<td>Shows some lack of awareness or</td>
<td>Not much regard for audience at</td>
<td>No sense or audience; author</td>
</tr>
<tr>
<td>Documentation</td>
<td>audience’s needs &amp; values; tone is perfect</td>
<td>audience; tone may be off the mark somewhat</td>
<td>all; tone may be off the mark</td>
<td>seems tone deaf</td>
<td></td>
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</tr>
<tr>
<td>Meets requirements of assignment</td>
<td>Sources are used ethically and cited perfectly</td>
<td>Falls short in 1 small way</td>
<td>Falls short in 2-3 small ways</td>
<td>Sources are improperly cited</td>
<td></td>
</tr>
<tr>
<td>Meets all requirements</td>
<td>Falls short in 1-2 ways</td>
<td>Falls short 3-4 ways</td>
<td>Falls short in more than 4 ways</td>
<td>Major problems with citation of sources</td>
<td></td>
</tr>
<tr>
<td>On time</td>
<td>On time</td>
<td>One day late.</td>
<td>Three days late.</td>
<td>A week late.</td>
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<td></td>
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<td>1 week + late.</td>
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