

K. Financial plan including annual
No additional costs are expected.

IX. Assessment Plan*

→ We will continue to use the students' research projects to assess their grasp of computational techniques as well as how to apply these techniques to their research.

To: UCC

10/25/16

From: Dr. Jeremy Thibodeaux

Dear UCC,

At the request of the College Curriculum Committee of the College of Arts and Sciences, I am writing to clarify the differences in MATH A375, Computational Mathematics, that we have proposed within the Computational Science Minor. As mentioned in the proposal, we are now requiring MATH A258, Calculus II, as a prerequisite for the course, while only MATH A257, Calculus I, was required before. This allows us to include many more topics in the course and thus have it more closely resemble this standard course that is offered at most universities.

Without the A258 requirement, we were very limited in the topics that could be covered and as a result did not allow this course to count as a 300-level elective for our mathematics majors. With the change in the prerequisite we can now offer this course to our students in the major. By including the new requirement, we can now include topics such as: Numerical Differentiation, Numerical Integration, Continuous Least-squares Approximation, Orthogonal Functions and Fourier Methods, and Numerical Solutions of Differential Equations. All of these topics require knowledge that students are not exposed to until completing MATH A258.

Thank you for considering this proposal.

Sincerely,

Dr. Jeremy Thibodeaux

Associate Professor

This course will have no effect on enrollments in other courses or sections within the department and will not prevent any important or required course from being offered in a given semester.

- D. Is there a service learning component? If yes, please attach a memo from the director of service learning describing this component.

There is no service learning component to this course.

- E. Explain how this proposal does or does not impact other departments, especially those serviced by your department or program and those that provide adjunct service to your department or program.

This advanced elective course will be taken mainly by physics majors and minors. It will have no impact on other departments.

- F. Attach a complete functional syllabus for the course as outlined in the Syllabus Template & Policy Undergraduate and Non-Law Graduate Courses

Syllabus is attached at the end of this document

IV. Attach a detailed plan for assessment of the proposed course that includes the following elements:

- A. Student learning outcomes for this course that are tied to course content and assignments. Key Question: What do you want student to know or be able to do at the end of this course? Methods, tools, instruments that will be employed to measure success. Describe methods for measuring inputs and outputs. Key Question: What the indicators of learning and course effectiveness?
- **Students will have a basic understanding of the principles of special relativity.**
 - **Assessment done by a final exam question targeted for this outcome**
 - **Students will have a basic understanding of the principles of general relativity**
 - **Assessment done by a final exam question targeted for this outcome**
 - **Students will understand the physical principles underlying the production and detection of a gravitational wave, and will be able to explain the major experimental challenges to achieving the required sensitivity for a real detector.**
 - **Assessment done with the grading rubric for an assigned research project**
 - **Students will know the main types of expected astrophysical sources of gravitational waves.**
 - **Assessment done by a final exam question targeted for this outcome**
- B. Criteria that will be used to measure accomplishments or outcomes. Key Question: How will we know that we are having a positive impact on our students' learning?

Evaluation of all the assessment results will tell us whether or not the students have achieved the learning outcomes for IV A. Individual assessments will be directly linked to those outcomes.

- C. Frequency and schedule of assessment of student learning in this course.