

**College Curriculum Proposal Approval and Routing Form**

TITLE OF PROPOSAL: Minor in Computational Science

Originating Faculty: Dr. Jeremy Thibodeaux

Department/College: Mathematical Sciences Chairperson: Dr. Ralph Tucci

Contact Phone/Email: 504 865 2656 thibodea@loyno.edu

Type of Proposal (Check all that apply):

New Major<sup>1</sup>  New Minor  New Concentration  Revise Existing Program

New Course  Change to Existing Course  Discontinue Program

Undergraduate  Graduate  Online  Professional & Cont. Studies  Other

**1. Resources and Fees:**

If this is a proposed revision, are there existing fees? No  Yes

\$

Will course or program fees be required for this course/program? No  Yes

\$

Are new resources needed for implementing this proposal? No  Yes

*If yes, include complete description and dollar amount in proposal.*

**2. College Review and Approvals:**

a. Department/School Ralph P. Tucci (Chair) Date: 9/12/16  
Approved  Not Approved

b. College Curriculum Committee \_\_\_\_\_ (Chair) Date: \_\_\_\_\_  
Approved  Not Approved

c. College Dean \_\_\_\_\_ Date: \_\_\_\_\_  
Supported  Not Supported

**3. Intercollegiate Review and Recommendations Required as applicable to proposal:**

a. Online Education Committee \_\_\_\_\_ (Chair) Date: \_\_\_\_\_  
Recommended  Not Recommended

b. Professional and Continuing Studies Committee \_\_\_\_\_ (Chair) Date: \_\_\_\_\_  
Recommended  Not Recommended

c. Graduate Council \_\_\_\_\_ (Chair) Date: \_\_\_\_\_  
Recommended  Not Recommended

**4. University<sup>2</sup> Recommendations Required as applicable to proposal:**

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- a. University Courses & Curriculum Committee \_\_\_\_\_ (Chair) Date: \_\_\_\_\_  
 Recommended \_\_\_\_\_ Not Recommended \_\_\_\_\_
- b. Standing Council for Academic Planning \_\_\_\_\_ (Chair) Date: \_\_\_\_\_  
 Recommended \_\_\_\_\_ Not Recommended \_\_\_\_\_

## INTERDISCIPLINARY PROGRAM PROPOSAL

Instructions: Use this form for all interdisciplinary program proposals. Use the College Program Proposal Form for single discipline program proposals.

Title of Program: Minor in Computational Science

Originating Faculty Member or Advisory Committee: Dr. Jeremy Thibodeaux

Contact Phone and Email: 504 865 2656 thibodea@loyno.edu

This is a \_\_\_\_\_ new program x modification of existing program requirements.

Summary Description of Proposal:

We are proposing that the minor be changed in the following ways:

- 1) MATH A271 Applied Scientific Computing will be removed since it was team-taught by Dean Calzada and Thomas Spence and this is no longer the case.
- 2) MATH A258 Calculus II will now be required as opposed to being an option.
- 3) COSC A212 Introduction to Programming II will now be required as opposed to being an option.
- 4) MATH A375 Computational Mathematics will still be required but will cover more substantial topics since MATH A258 will be the new prerequisite.

**Please complete the following sections. Append relevant attachments and exhibits to the proposal.**

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2 Approval by the Strategic Planning Team, University Budget Committee, and/or Board of Trustees may be required for proposals that have significant impact on resources or mission. Proposals to establish or discontinue degree programs require approval by Board of Trustees and SACS.

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UC&CC approved 11/29/2012

\*Criteria of Standing Council for Academic Planning for new program proposals. Proposals for new programs will be reviewed using these criteria. While all criteria may not be satisfied, all criteria must be addressed in a proposal.

## **I. Rationale for New Program or Modification in Existing Program**

Provide a clear and compelling rationale for any proposed curriculum modification, including additions and deletions to the course inventory, changes in degree/program requirement, new degree programs, and other major curriculum revisions. The justification should state explicitly and clearly how the new or revised program relates to the academic strengths and/or needs of the participating colleges and the university.

The rationale should also consider the degree to which the proposed new minor or major will enhance retention.

If this is a revision to an existing program, how will the proposed change or changes improve the program?

The main issue is that currently, MATH A375 has only MATH A257 and COSC A211 as prerequisites. The original rationale for this low requirement was that it would attract students from less mathematical majors to the Computational Science Minor. Since the level of the material is relatively basic, we decided that the course would not count as a 300-level elective for mathematics majors. What we have seen since then is that we are not attracting students from less mathematical majors to the minor. Most of the students in the minor are either physics or chemistry majors and are required to take Math A258, with or without the minor. The problem that we now have is that since our majors are excluded, enrollment numbers in MATH A375 have been so low that the course doesn't get taught. We propose changing the prerequisites to MATH A258 and COSC A211 and covering more advanced topics and thus making MATH A375 appropriate as a 300-level course that would be available to our mathematics majors.

The reason that we are now requiring COSC 212, as opposed to previously having it as an option, is that the previous minor guaranteed at least three courses in which the students did at least some programming. We felt that this was an important aspect of the minor and that it should be preserved. The courses were COSC 212, MATH A271, and MATH A375. Since we can no longer offer MATH A271, we have included COSC 212 as a requirement.

## **II. Mission\***

Describe ways in which the proposed program responds directly or indirectly to the written mission of the university.

NA This is an existing program

**III. Alignment with the University Strategic Plan\***

Describe ways in which the goals of the proposed program align with the university strategic plan's overarching objectives and strategies as well as the department and college strategic plan.

NA This is an existing program

**IV. Demand for New Department/Program\***

NA This is an existing program

**V. Relationships to Other Existing Programs\***

NA This is an existing program

**VI. Impact on the Curriculum:**

- A. Which departments and colleges will be contributing courses? Will an introductory course be needed to introduce methodologies and integrate disciplines? If there is no introductory foundational course, please explain why this is not needed.

The Mathematical Sciences Department will teach all courses. The research project will be supervised by a faculty member in the student's major.

- B. Resources needed for the new or revised minor or major:

1. List of courses<sup>3</sup> and names of faculty whose courses will be included. Detail the extent to which these courses will be able to accommodate additional students.

Dr. Tucci and Dr. McDermott will teach COSC A211 and COSC A212. Math A257 and Math A258 will be taught by various members of the Department of Mathematical Sciences. Either Dr. Thibodeaux or Dr. Li will teach Math A375.

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<sup>3</sup> Include information on when these courses were last taught and how often you expect this course to be taught in the future.

2. Detail the extent to which this minor/major will impact upon existing departmental or program resources of the various faculty involved.

The program already exists and so we do not expect any new impact.

3. If the program requires a director, name the director and the compensation requested in terms of course releases or a stipend.

Dr. Jeremy Thibodeaux is currently the director without course releases or a stipend.

How will proposed change impact the major/adjunct/elective hour distribution requirement for the major or program? For new or significantly revised programs, provide a detailed description of the major/adjunct/elective elements of the curriculum, including copies of the old and new Degree Course Program Lists (DPCL) or equivalent.

No change is expected.

C. Specify whether any new courses will be offered, and whether this will increase the total number of courses or sections offered by any participating departments.

No new courses will be offered.

D. To what extent will any new courses for this program impact upon resources in the departments and programs in which these faculty are teaching? Will any new courses replace courses currently offered? Will any such courses prevent an important or required course from being offered in a given semester?

NA

E. If new courses will not increase the overall number of offerings, specify which course(s) or section(s) will be dropped in a given semester to create room.

NA

F. Specify any anticipated impact on enrollments in other courses or sections within the department and whether or not this program will prevent an important or required course from being offered in a given semester.

No impact is expected.

- G. Assess the impact of the proposed change on other departments, especially those serviced by your department or program and those that provide adjunct service to your department or program.

No impact is expected.

- H. Will there be a service learning component? Description of service learning component to be provided by director of service learning.

No

- I. All proposals must be accompanied by a supporting letter from the chair of each participating department confirming the department's support.

#### **VII. New Course Proposals**

None

#### **VIII. Adequacy of Current Resources , Additional resources required\*and Impact on Budget**

- A. Staffing: Is current staffing sufficient or will new faculty or staff be needed (whether full-time or part-time)? List by name current faculty and staff resources, including those available through consortial agreements, and number of new faculty or staff required (may involve a stepped approach depending on enrollment projections).

No new faculty are needed

- B. How will the proposed program or modification impact participating departments' staff and operating budgets?

No impact is expected

- C. Support services. Will the proposed change require additional support services (Media Services audio/visual: typing/secretarial, computer services, computer time)?

No additional support will be needed.

D. Will there be course development expenses?

No

E. Library Information resources – including an assessment of the Monroe Library’s resources in comparison with potential peer programs, to be provided by the library liaison.

F. Instructional technology resources and staffing (e.g., learning management system capabilities, streaming media, videoconferencing, classroom capture).

G. New equipment. Does the proposed change presuppose the purchase of new equipment, whether for support or instruction?

No new equipment is needed.

H. Information Technology (learning management system capacity, network capacity, lab software)

No new software or support from Information Technology will be needed.

I. Describe other academic support services required.

None

J. Space requirements. Describe instructional and support space and needed for this program.

K. Financial plan including annual

No additional costs are expected.

**IX. Assessment Plan\***

This is an existing program

## Proposed New Minor Requirements

The Computational Science minor requires the following 20 hours:	
COSC A211 Intro. to Programming I	3 credits
COSC A212 Intro. to Programming II	3 credits
MATH A257 Calculus I	4 credits
MATH A258 Calculus II	4 credits
MATH A375 Computational Mathematics	3 credits
Research Project with a Faculty Member	3 credits

## Current Minor Requirements

The Computational Science minor requires the following 21 hours:	
COSC A211 Intro. to Programming I	3 crs.
MATH A257 Calculus I	4 crs.
MATH A271 Applied Scientific Computing	3 crs.
MATH A375 Computational Mathematics	3 crs.
<i>Choose one of the following four options:</i>	8 or 9 crs.
<p><b>Option 1: 9 crs.</b>            MATH A258 Calculus II            COSC A212 Intro. to Programming II            Research: 2 crs.</p> <p><b>Option 2: 8 crs.</b>            MATH A258 Calculus II            Research: 4 crs.</p> <p><b>Option 3: 8 crs.</b>            PSYC A303 Statistics &amp; Methods <u>or</u>            MATH A260 Statistical Inference for Scientists <u>or</u>            DESC B205 Business Statistics            MATH A498 Research Project: 2 crs.            COSC A212 Introduction to Programming II <u>or</u>            MATH A498 Research Project: 3 crs.</p> <p><b>Option 4: 8 crs.</b>            COSC A212 Introduction to Programming II            Research (5 crs)</p>	





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**Mathematical Sciences**

TO: College of Arts & Sciences Curriculum Committee

FROM: Ralph P. Tucci *RPT*  
Chair, Department of Mathematical Sciences

RE: Changes in the Computational Science Minor

DATE: April 11, 2016

On February 2 2016 the Department of Mathematical Sciences voted to support the proposed changes to the Computational Science Minor.