University of Wisconsin-Whitewater

Curriculum Proposal Form #4R

# **Change in or Deletion of an Existing Course**

Type of Action (check all that apply)

 [x]  Pre-requisite Change

[ ]  Add Cross-listing \* [ ]  Technological Literacy

[ ]  Course Deletion [ ]  Title Change
[ ]  Number Change [ ]  Writing Requirement

[x]  (other) Course Description

**Effective Term**:

**Current Course Number** (*subject area and 3-digit course number)*: COMPSCI 347
**Cross-listing *(if applicable)***:

**New Course Number** (*subject area and 3-digit course number*):

**Cross-listing *(if applicable)***:

**\*If adding a cross-listing, include the following:**

Required in the major:

Required in the minor:

Number of credits: Lab hours/week:

Contact hours/week: Repeatable

**Current Course Title**: Scientific Computing

**New Course Title**:

**25-Character Abbreviation** *(if new title)*:

**Sponsor(s)**: Leon Arriola and Sobitha Samaranayake

**Department(s):** Mathematical and Computer Sciences

**College(s):**

**List all programs that are affected by this change:**

If programs are listed above, will this change affect the Catalog and Advising Reports for those programs? If so, have Form 2's been submitted for each of those programs?

(Form 2 is necessary to provide updates to the Catalog and Advising Reports)

[x]  NA [ ]  Yes [ ]  They will be submitted in the future

Proposal Information: ([***Procedures for form #4R***](http://acadaff.uww.edu/UCC/Curriculum_Handbook_09/Procedures_form4R.docx))

1. **Detailed explanation of changes** (use FROM/TO format)

***FROM:***

**Prerequisite**: MATH 253 and 254 or consent of the instructor

**Course Description**:

This course provides the applied scientist with the basic tools needed to perform computing within a scientific context. The computational aspects focus on two major areas: (1) the development and implementation of numerical algorithms in computer programs, and (2) the analysis and visualization of complex data sets. The numerical methods covered include finding roots of nonlinear equations, solving linear systems, the eigenvalue problem, numerical integration, the initial value problem, and data fitting. The high-level computer language used is Matlab.

***TO:***

**Prerequisite**: MATH 253 or consent of the instructor

**Course Description:**

This course provides the applied scientist with the basic tools needed to perform computing within a scientific context. The computational aspects focus on two major areas: (1) the development and implementation of numerical algorithms in computer programs, and (2) the analysis and visualization of complex data sets. The numerical methods covered include finding roots of nonlinear equations, solving linear systems, the eigenvalue problem, numerical integration, the initial value problem, and data fitting. The high-level computer packages used are **Mathematica and** Matlab.

## Justification for action

The prerequisite of Calculus 254 is not needed since all of the necessary mathematical techniques needed will be developed and covered as needed. Also, the addition of Mathematica gives the student familiarity with the powerful symbolic capabilities of Mathematica while Matlab provides a robust numerical environment for applications in linear algebra and dynamical systems.