Course Approval Form

For instructions:
http://registrar.gmu.edu/facultystaff/catalog-revisions/course/

Action Requested: (definitions available at website above)
[X] Create NEW [ ] Inactivate
[ ] Modify (check all that apply below)

[ ] Title (must be 75% similar to original) [ ] Repeat Status [ ] Prereq/coreq [ ] Grade Mode
[ ] Credits [ ] Schedule Type [ ] Restrictions [ ] Other: _____

Course Level:
[X] Undergraduate [ ] Graduate

College/School: COS **Department:** Computational and Data Sciences
Submitted by: Andrew Crooks **Ext:** 34640 **Email:** Acrooks2@gmu.edu

Subject Code: CDS **Number:** 201
(Do not list multiple codes or numbers. Each course proposal must have a separate form.)

Effective Term: [X] Fall [ ] Spring [ ] Summer *Year* 2016

Title:
Current: Introduction to Computational Social Science
Banner (30 characters max w/ spaces): Intro to Comp Social Sci
New:

Fulfills Mason Core Req? (undergrad only)
[ ] Currently fulfills requirement
[ ] Submission in progress

Credits: (check one)
[X] Fixed → 3
[ ] Variable → to
[ ] Lec + Lab/Rct→ 0 or

Repeat Status: (check one)
[X] Not Repeatable (NR)
[ ] Repeatable within degree (RD) →
[ ] Repeatable within term (RT) →
Max credits allowed: (required for RT/RD status only)

Grade Mode: (check one)
[X] Regular (A, B, C, etc.)
[ ] Satisfactory/No Credit
[ ] Special (A, B C, etc. +IP)

Schedule Type: (check one)
LEC can include LAB or RCT if linked sections will be offered
[X] Lecture (LEC)
[ ] Lab (LAB)
[ ] Recitation (RCT)
[ ] Internship (INT)
[ ] Independent Study (IND)
[ ] Seminar (SEM)
[ ] Studio (STU)

Prerequisite(s) (NOTE: hard-coding requires separate Prereq Checking form; see above website):
None

Corequisite(s):

Restrictions Enforced by System: Major, College, Degree, Program, etc. Include Code(s).
None

Equivalencies (check only as applicable):
[ ] YES, course is 100% equivalent to _____
[ ] YES, course renumbered to or replaces _____

Catalog Copy for NEW Courses Only (Consult University Catalog for models)

Description (No more than 60 words, use verb phrases and present tense)	**Notes** (List additional information for the course)
Undergraduate-level introduction to computational concepts, principles, and modeling approaches in social sciences, emphasizing simulations and elements of complexity theory as they apply to social phenomena. Survey includes systems dynamics, cellular automata, and agent-based models.	

Indicate number of contact hours: Hours of Lecture or Seminar per week: 3 Hours of Lab or Studio: 0
When Offered: (check all that apply) [x] Fall [ ] Summer [ ] Spring

Approval Signatures

Department Approval Date College/School Approval Date

If this course includes subject matter currently dealt with by any other units, the originating department must circulate this proposal for review by those units and obtain the necessary signatures prior to submission. Failure to do so will delay action on this proposal.

Unit Name	Unit Approval Name	Unit Approver's Signature	Date

For Graduate Courses Only

Graduate Council Member Provost's Office Graduate Council Approval Date

Course Proposal Submitted to the College of Science Curriculum Committee (COSCC)

The form above is processed by the Office of the University Registrar. This second page is for the COSCC's reference. Please complete the applicable portions of this page to clearly communicate what the form above is requesting.

FOR ALL COURSES (required)

Course Number and Title: CDS 201: Introduction to Computational Social Science

Date of Departmental Approval: 10th November 2015

FOR NEW COURSES (required if creating a new course)

- Reason for the New Course:
  - Computational Social Science (CSS) is the interdisciplinary science of complex social systems and their quantitative investigation through computational modeling and related techniques (e.g. social network analysis). This course will showcase how CSS is at the intersection of social science and computer science and provide students the ability to investigate social phenomena through advanced computational modeling.
  - Students will be required to carry out short modeling exercises in this course thus turning what has been taught in the class into practice.
  - By the end of the course the student will not only understand what CSS offers the social and computational sciences but be able to design and implement a simple CSS project, that starts with a research question, data collection and why specific methods/models are used and concludes with some data/model analysis.
- Relationship to Existing Programs: Complements other CDS modeling and simulation courses.
- Relationship to Existing Courses: Non. This is a new course and GMU has nothing similar at the undergraduate level.
- Semester of Initial Offering: Fall 2016
- Proposed Instructors: TBD
- Tentative Syllabus Below

CDS 201
Introduction to Computational Social Science

-- DRAFT SYLLABUS --

Prerequisites: None

Credits: 3

Instructor: TBD

Office Hours: TBD

Course Description: Undergraduate-level introduction to computational concepts, principles, and modeling approaches in social sciences, emphasizing simulations and elements of complexity theory as they apply to social phenomena. Survey includes systems dynamics, cellular automata, and agent-based models.

Lecture Content:

1. Introduction to Computational Social Science
2. Methods
    a. The role of modeling and simulation in the social sciences.
        i. How to build models for social systems
    b. Modeling techniques:
        i. System Dynamics
        ii. Discrete Event Simulations
        iii. Microsimulation
        iv. Cellular Automata
        v. Agent-based
    c. Applications:
        i. Traffic, economics, health, sustainability, etc.

Homework: Students will be expected to complete bi-weekly assignments and 1 project.
Exams: There will be one final exam and a midterm.
Evaluation: Homework (40%), Project (20%), Midterm (10%), Final Exam (30%)

Required Textbooks: Cioffi-Revilla, C. (2014), Introduction to Computational Social Science: Principles and Applications, Springer, New York, NY.