Course Approval Form

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
Submitted by: Andrew Crooks
Department: Computational and Data Sciences
Ext: 34640
Email: Acrooks2@gmu.edu

Subject Code: CDS
Number: 205
Effective Term:
- Fall
- Spring
- Year: 2017
- Summer

Title: Current
- Introduction to Agent-based Modeling and Simulation
New
- Intro Agent-based Model & Sim

Credit: Fixed
- X Variable
- 3
- to
- 0 or

Repeat Status:
- Not Repeatable (NR)
- Repeatable within degree (RD)
- Repeatable within term (RT)
- Max credits allowed:

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

Schedule Type:
- Lecture (LEC)
- Independent Study (IND)
- Lab (LAB)
- Seminar (SEM)
- Recitation (RCT)
- Studio (STU)
- Internship (INT)

Prerequisite(s):

Corequisite(s):

Restrictions Enforced by System: Major, College, Degree, Program, etc. Include Code(s).

Equivalencies (check only as applicable):

Catalog Copy for NEW Courses Only

Description (No more than 60 words, use verb phrases and present tense)
Undergraduate-level introduction to Agent-based Modeling. Provides a background onto why agent-based models and hands-on examination of agent-based models in the social sciences by examining and experimenting with a variety of social simulation projects.

Notes (List additional information for the course)

Indicate number of contact hours:

When Offered: (check all that apply)
- 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

Form revised 9/14/2015
FOR ALL COURSES (required)
Course Number and Title: CDS 205: Introduction to Agent-based Modeling and Simulation

Date of Departmental Approval: 10th November 2015

FOR NEW COURSES (required if creating a new course)
- Reason for the New Course:
  - The growth in computational power has enabled us to explore more complex problems and build and analyze more complex models. With respect to the social sciences, the agent-based modeling methodology is leading in this domain. There is no undergraduate course at Mason that exposes students to such a methodology which can be applied to all social science disciplines.
  
  - 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 agent-based modeling offers to the social and computational sciences but also be able to design, implement and analyze a simple agent-based model by themselves.

- Relationship to Existing Programs: None, new course which has no overlap with others at GMU.

- Relationship to Existing Courses: New course which will enhance our offerings to modeling and simulation.

- Semester of Initial Offering: Spring 2017

- Proposed Instructors: TBD

- Tentative Syllabus Below
CDS 205
Introduction to Agent-based Modeling and Simulation

-- DRAFT SYLLABUS --

Prerequisites: None

Credits: 3

Instructor: TBD

Office Hours: TBD

Course Description: Undergraduate-level introduction to Agent-based Modeling. Provides a background onto why agent-based models and hands-on examination of agent-based models in the social sciences by examining and experimenting with a variety of social simulation projects.

Lecture Content:

1. Introduction to Agent-based modeling
2. Why agent-based modeling
3. What is Agent-based modeling
4. Creating Simple agent-based models
5. The components of agent-based modeling
6. Exploring and Extending Agent-based models
7. Analyzing agent-based models
8. Verification, Validation and Replication
9. Advanced topics and Applications

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%)