

REQUEST TO COLLEGE CURRICULUM COMMITTEE FOR CURRICULAR IMPROVEMENTS

DEPARTMENT: CS PROPOSED EFFECTIVE SEMESTER: Spring 2015 COLLEGE: CEAS

PROPOSED IMPROVEMENTS

Academic Program

- ☐ New degree*
☐ New major*
☐ New curriculum*
☐ New concentration*
☐ New certificate
☐ New minor
☐ Revised major
☐ Revised minor
☐ Admission requirements
☐ Graduation requirements
☐ Deletion ☐ Transfer
☐ Other (explain**)

Substantive Course Changes

- ☐ New course
☒ Pre or Co-requisites
☐ Deletion (required by others)
☐ Course #, different level
☐ Credit hours
☐ Enrollment restriction
☐ Course-level restriction
☐ Prefix ☐ Title and description
 (attach current & proposed)
☐ General education (select one)
 Not Applicable
☐ Other (explain**)

Misc. Course Changes

- ☒ Title
☒ Description (attach current & proposed)
☐ Deletion (not required by others)
☐ Course #, same level
☐ Variable credit
☐ Credit/no credit
☐ Cross-listing
☐ COGE reapproval
☒ Other (explain**)

** Other: A minimum grade of B in the prerequisite courses

Title of degree, curriculum, major, minor, concentration, or certificate:

Existing course prefix and #: CS6800 Proposed course prefix and #: Credit hours:

Existing course title: Theory of Formal Computation III: Computability and Complexity

Proposed course title: Advanced Theory of Computation

Existing course prerequisite & co-requisite(s): CS5800

Proposed course prerequisite(s) No change

If there are multiple prerequisites, connect with "and" or "or". To remove prerequisites, enter "none."

Proposed course co-requisite(s)

If there are multiple corequisites, they are always joined by "and."

Proposed course prerequisite(s) that can also be taken concurrently:

Is there a minimum grade for the prerequisites or corequisites?

A minimum grade of B in the prerequisite courses.

Major/minor or classification restrictions:

List the Banner 4 character codes and whether they should be included or excluded.

For 5000 level prerequisites & corequisites: Do these apply to: (circle one) undergraduates graduates **both**

Specifications for University Schedule of Classes:

a. Course title (maximum of 30 spaces): Adv. Theory of Computation

b. Multi-topic course: ☒ No ☐ Yesc. Repeatable for credit: ☒ No ☐ Yesd. Mandatory credit/no credit: ☒ No ☐ Yes

e. Type of class and contact hours per week (check type and indicate hours as appropriate)

1. ☒ Lecture 3 credit hrs. 3. ☐ Lecture/lab/discussion 5. ☐ Independent study
 2. ☐ Lab or discussion 4. ☐ Seminar or ☐ studio 6. ☐ Supervision or practicum

CIP Code (Registrar's use only):

Chair/Director

Date 2/27/15

Chair, College Curriculum Committee

Date

Dean

Date:

Graduate Dean:

Date

Curriculum Manager: Return to dean ☐ Date

Forward to:

Date

Chair, COGE/ PEB / FS President

Date

FOR PROPOSALS REQUIRING GSC/USC REVIEW:

* ☐ Approve ☐ Disapprove Chair, GSC/USC

Date

* ☐ Approve ☐ Disapprove

Provost

Date

1. Explain briefly and clearly the proposed improvement.

This proposed improvement is to change the title and description of CS6800. The proposed description gives more information.

Proposed title: Advanced Theory of Computation

Proposed description:

The theory of computation emphasizing equivalent models of computation, properties of recursively enumerable languages, computability (decidability and semi-decidability), recursive and partial recursive functions, and complexity. The Chomsky hierarchy is also reviewed and some of the more advanced topics (than those covered in the prerequisite) are addressed. Students are expected to read research papers and complete a semester project.

A minimum grade of B in the prerequisite course.

2. Rationale. Give your reason(s) for the proposed improvement. (If your proposal includes prerequisites, justify those, too.)

As CS 4800 (which was Theory of Computation I) is no longer used, we now have the core course CS 5800 (Theory Foundations) as the first course in the Theory of Computation, and CS 6800 as the second or advanced course.

3. Effect on other colleges, departments or programs. If consultation with others is required, attach evidence of consultation and support. If objections have been raised, document the resolution. Demonstrate that the program you propose is not a duplication of an existing one.

None.

4. Effect on your department's programs. Show how the proposed change fits with other departmental offerings.

During the most recent revision of the M.S. degree program CS5800 (Theory Foundations) has become a core course and serves as the prerequisite of CS6800. The students are required to take the core courses at an early stage of their study.

5. Effects on enrolled students: Are program conflicts avoided? Will your proposal make it easier or harder for students to meet graduation requirements? Can students complete the program in a reasonable time? Show that you have considered scheduling needs and demands on students' time. If a required course will be offered during summer only, provide a rationale.

The new situation will make it easier for students to meet graduation requirements, since the prerequisite CS5800 has become a core course that all graduate students must take.

6. Student or external market demand. What is your anticipated student audience? What evidence of student or market demand or need exists? What is the estimated enrollment? What other factors make your proposal beneficial to students?

No change.

7. Effects on resources. Explain how your proposal would affect department and University resources, including faculty, equipment, space, technology, and library holdings. Tell how you will staff additions to the program. If more advising will be needed, how will you provide for it? How often will course(s) be offered? What will be the initial one-time costs and the ongoing base-funding costs for the proposed program? (Attach additional pages, as necessary.)

None.

8. General education criteria. For a general education course, indicate how this course will meet the criteria for the area or proficiency. (See the General Education Policy for descriptions of each area and proficiency and the criteria. Attach additional pages as necessary. Attach a syllabus if (a) proposing a new course, (b) requesting certification for baccalaureate-level writing, or (c) requesting reapproval of an existing course.) N/A
9. List the learning outcomes for the proposed course or the revised or proposed major, minor, or concentration. These are the outcomes that the department will use for future assessments of the course or program. N/A

10. Describe how this curriculum change is a response to assessment outcomes that are part of a departmental or college assessment plan or informal assessment activities. N/A
11. (Undergraduate proposals only) Describe, in detail, how this curriculum change affects transfer articulation for Michigan community colleges. For course changes, include detail on necessary changes to transfer articulation from Michigan community college courses. For new majors or minors, describe transfer guidelines to be developed with Michigan community colleges. For revisions to majors or minors, describe necessary revisions to Michigan community college guidelines. Department chairs should seek assistance from college advising directors or from the admissions office in completing this section. N/A

Current catalog description:

CS 6800 - Theory of Formal Computation III: Computability and Complexity

The theory of computation emphasizing properties of families of languages, computability, and complexity.

Prerequisites/Corequisites: Prerequisite: CS 5800.

Credits: 3 hrs.

Notes: Open to Graduate Students Only.

Proposed catalog description:

CS 6800 - Advanced Theory of Computation

The theory of computation emphasizing equivalent models of computation, properties of recursively enumerable languages, computability (decidability and semi-decidability), recursive and partial recursive functions, and complexity. The Chomsky hierarchy is also reviewed and some of the more advanced topics (than those covered in the prerequisite) are addressed. Students are expected to read research papers and complete a semester project.

Prerequisites/Corequisites: Prerequisite: CS 5800.

Credits: 3 hrs.

Notes: Open to Graduate Students Only.