CEAS-14-CS-064

REQUEST TO COLLEGE CURRICULUM COMMITTEE FOR CURRICULAR IMPROVEMENTS

DEPARTMENT: **PROPOSED EFFECTIVE SEMESTER:** **COLLEGE:**

PROPOSED IMPROVEMENTS

Academic Program
- ☐ New degree*
- ☐ New major* proposed)
- ☐ 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
- XX☐ 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 &
- ☐ Deletion (not required by others)
- ☐ Course #, same level
- ☐ Variable credit
- ☐ Credit/no credit
- ☐ Cross-listing
- ☐ COGE reapproval
- ☐ Other (explain**)

**** Other:**

Title of degree, curriculum, major, minor, concentration, or certificate: CSI & CSG & CST majors

Existing course prefix and #: CS4310 **Proposed course prefix and #:** **Credit hours:** 3.0

Existing course title: Design and Analysis of Algorithms

Proposed course title:

Existing course prerequisite & co-requisite(s): CS3310 and MATH1450
Proposed course prerequisite(s) CS3310
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? C for undergraduates
The default grades are D for undergraduates and C for graduates.
Major/minor or classification restrictions: none
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): Design & Analysis ofAlgorithms
b. Multi-topic course: XX☐No ☐Yes **NO**
c. Repeatable for credit: XX☐ No☐ Yes **NO**
d. Mandatory credit/no credit: XX☐ No ☐Yes **NO**
e. Type of class and contact hours per week (check type and indicate hours as appropriate)
1. XX☐ Lecture **LECTURE**
2. ☐ Lab or discussion
3. ☐ Lecture/lab/discussion
4. ☐ Seminar or ☐ studio
5. ☐ Independent study
6. ☐ Supervision or practicum

CIP Code (Registrar's use only):

Chair/Director _____ Date 11/4/14

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

Revised May 2007. All previous forms are obsolete and should not be used.

1. Explain briefly and clearly the proposed improvement.

   Change CS4310's prerequisites to just CS3310. It currently lists both CS3310 and MATH1450 as prerequisites.

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

   We previously changed the prerequisites for CS3310 to include MATH1450 or CS1310 (besides CS1120). So we no longer need to list MATH1450 as a prerequisite for CS4310.

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. Only CS majors take CS4310.

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

   None.

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.

   None.

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?

   NA

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.)
   NA

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.
   No change

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.
    NA

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.

    None

Catalog Copy

Current:

CS 4310 - Design and Analysis of Algorithms

A continuation of the study of data structures and algorithms. It provides a theoretical foundation in designing algorithms. The focus is on the advanced analysis of algorithms and on how the selections of different data structures affect the performance of algorithms. Algorithmic paradigms such as divide and conquer, greedy method, dynamic programming, backtracking and branch and bound are covered. B-trees and 2 to 3 search trees and a variety of graph structures are discussed along with their applications to algorithm implementation. Algorithms will be analyzed for their complexity. NP-completeness will be introduced.

Prerequisites & Corequisites: Prerequisites: MATH 1450 and CS 3310 or equivalent.

Credits: 3 hours

Proposed:

CS 4310 - Design and Analysis of Algorithms

A continuation of the study of data structures and algorithms. It provides a theoretical foundation in designing algorithms. The focus is on the advanced analysis of algorithms and on how the selections of different data structures affect the performance of algorithms. Algorithmic paradigms such as divide and conquer, greedy method, dynamic programming, backtracking and branch and bound are covered. B-trees and 2 to 3 search trees and a variety of graph structures are discussed along with their applications to algorithm implementation. Algorithms will be analyzed for their complexity. NP-completeness will be introduced.

Prerequisites & Corequisites: Prerequisites: CS 3310 or equivalent.

Credits: 3 hours