ACADEMIC REQUEST FORM (LEVEL I AND II) (4/16)

Please attach/submit additional documents as needed to fully complete each section of the form. Deadlines and instructions can be found on the Office of the Provost's curriculum website.

Proposals for a NEW degree or center require notification in advance of this proposal. See the Office of the Provost's curriculum website for information.

I. DEPARTMENT / PROGRAM

Computer Science

II. SUMMARY OF CHANGE REQUESTED

We propose adding a secondary teaching licensure program in computer science to our departmental offerings. This new Level I teaching minor in CS will require no additional courses in CS and only one new methods course in Teaching and Learning; no additional funding is required or requested for this minor.

III. ENDORSEMENTS AND APPROVALS

Requestor: YOLANDA REIMER  
Phone/ Email: 243-4618/yolanda.reimer@umontana.edu

Program Chair: 

Other Affected Programs:
Teaching + Learning  
Prof. Educ. Council

Dean: 

Graduate School Dean (If Graduate Level) 

Library Dean (Req. for #11 below only) 

☐ Resources included in the proposal are sufficient to adequately support the new program's library needs.

Provost:

IV. TYPE OF PROPOSAL

Any additional required forms are listed after each type of proposal and must accompany this form. Proposals for a new degree or center require notification in advance of this proposal. See the Office of the Provost's curriculum website for information and instructions.
Level I Proposals:

1a. Placing a program into moratorium (Program Termination Form)
1b. Withdrawing a program from moratorium
2. Adding, retitling, terminating or revising a campus certificate of 29 credits or fewer
3. Adding a BAS/AA/AS Area of Study
4. Offering an existing program via distance or online delivery
5. Retitling an existing postsecondary educational program
6. Terminating an existing postsecondary educational program (Program Termination Form)
7. Consolidating existing postsecondary educational programs (BOR Curriculum Proposal Form)
8. Adding a new minor where there is a major or option in a major (BOR Curriculum Proposal Form)
9. Revising a program substantially (e.g. changing program focus) (BOR Curriculum Proposal Form)
10. Adding a temporary Certificate or AAS Degree Program Approval limited to 2 years

Level II Proposals:

11. Establishing a new postsecondary educational program (Curriculum Proposal and Reviewed Intent to Plan Form)
12. Exceeding the 120 credit maximum for baccalaureate degrees Exception to policy 301.11
13. Forming a college, division, school, department, institute, bureau, center, station, laboratory or similar unit (Curriculum Proposal or Center/Institute Proposal and Reviewed Intent to Plan Form)
14. Eliminating or consolidating a college, division, school, department, institute, bureau, center, station, laboratory or similar unit.
15. Retitling a college, division, school, department, institute, bureau, center, station, laboratory or similar unit.

V. CIP CODE (CLASSIFICATION OF INSTRUCTIONAL PROGRAMS)

The BOR requires a CIP Code (Classification of Instructional Programs) for tracking and reporting of degrees. Use the CIP Code website to identify the most applicable code: ___ 13.1321 _______

VI. METHOD OF DELIVERY

Will more than 50% of the proposed program be delivered via online or distance methods?
☐ Yes  ☒ No

VII. CATALOG LANGUAGE

Attach the current or proposed catalog language with any changes clearly identified.

Computer Science Teaching Minor (22 credits)

This minor is designed to prepare students to teach grades 5-12 Computer Science. Teaching minors require completion of a teaching major in another field.

Program Requirements:

1. Grades below C- in professional education courses or content courses will not be accepted in the teaching major or teaching minor. Teacher candidates must have a cumulative 2.75 GPA in teaching major and teaching minor courses to qualify for student teaching.

2. Complete the following required courses:
   CSCI 105: Computer Fluency.
VIII. JUSTIFICATION

Provide enough information that someone without specialized knowledge can make an informed decision.

Despite the national push for preparing students ready for college and careers, including the interest and ability to program computers and prepare for careers in STEM fields, there are no active teacher preparation programs in computer science in the state (UM-Western has one on the books but it is not functioning). This minor represents a collaborative effort among faculty in the Departments of Computer Science, Teaching and Learning, and Missoula College; it would establish UM as a leader in Montana in this area of critical importance and help with the national need for highly effective teachers of computer science.

IX. SUBMISSION

Submit a hard copy of this form with all required signatures to the Office of the Provost. Please also submit an electronic copy of this Word document, along with all other required BOR forms (in Word) to jasminezink.laine@mso.umt.edu

- After approval by the Provost, the proposal will be submitted to the Faculty Senate Office.
- After approval by the appropriate Curriculum Committee (ASCRC or Graduate Council), the full Faculty Senate must approve the proposal.
- Upon Faculty Senate approval, the Office of the Provost will submit the proposal to OCHE for the next possible OCHE/BOR meeting.
  - Note that BOR and internal UM deadlines require submission quite in advance of the BOR meeting.
- The Office of the Provost will notify the proposer once the change has been approved by OCHE/BOR.
Montana Board of Regents
CURRICULUM PROPOSAL FORM

1. Overview

A. Provide a one paragraph description of the proposed program. Be specific about what degree, major, minor or option is sought.

We propose adding a secondary licensure program minor in computer science to our departmental offerings. This new Level I teaching minor in CS will not require the addition of any new courses in CS, although one new methods course in the Department of Teaching and Learning is required. Despite the national push to prepare students for college and careers in computing and STEM related fields, there are currently no active teacher preparation programs in computer science in the state of Montana (UM-Western has one on the books but it is not functioning). The new licensure we propose would establish UM-Missoula as a leader in Montana in an area of critical importance and growth, and it would help fulfill a local and national need for effective high school computer science educators.

2. Institutional and System Fit

A. What is the connection between the proposed program and existing programs at the institution?

This minor represents a collaborative effort among faculty in the departments of Computer Science (CS), Teaching and Learning (T&L, formerly C&I), and Missoula College. Students would need a secondary licensure teaching program through T&L; most of the required content courses for the minor would be taught by the CS dept; Missoula College will teach two content courses and co-teach the T&L methods course.

B. Will approval of the proposed program require changes to any existing programs at the institution? If so, please describe.

There is no change to existing programs, and no new funding is required for this minor.

C. Describe what differentiates this program from other, closely related programs at the institution (if appropriate).

Currently there are no active teacher preparation programs in computer science offered at the University of Montana.

D. How does the proposed program serve to advance the strategic goals of the institution?

Computer science is one of the five areas identified for growth in the President’s remarks from the November 15th, 2015 campus budget forum (http://www.umt.edu/president/docs/). President Engstrom notes the importance of computer science as a driver of local and national economies, and thus an area of particular interest to students. The CS teaching minor that we propose adding to our curriculum will fill a current void in the state, and it will establish UM as a leader in this area. The minor we envision will require no additional courses in CS and one additional methods course in T&L. Once established, the minor program might potentially be developed further into an online format, thereby increasing the number of educators from around the state who can participate and benefit from it.
E. Describe the relationship between the proposed program and any similar programs within the Montana University System. In cases of substantial duplication, explain the need for the proposed program at an additional institution. Describe any efforts that were made to collaborate with these similar programs; and if no efforts were made, explain why. If articulation or transfer agreements have been developed for the substantially duplicated programs, please include the agreement(s) as part of the documentation.

Currently there are no active teacher preparation programs in computer science offered in the state of Montana. Due to the importance of a computer science teaching minor, we recognize the need for this opportunity to be offered in the future by multiple MUS institutions.

3. Program Details

A. Provide a detailed description of the proposed curriculum. Where possible, present the information in the form intended to appear in the catalog or other publications. NOTE: In the case of two-year degree programs and certificates of applied science, the curriculum should include enough detail to determine if the characteristics set out in Regents’ Policy 301.12 have been met.

**Computer Science Teaching Minor (22 credits)**

This minor is designed to prepare students to teach grades 5-12 Computer Science. Teaching minors require completion of a teaching major in another field.

**Program Requirements:**

1. Grades below C- in professional education courses or content courses will not be accepted in the teaching major or teaching minor. Teacher candidates must have a cumulative 2.75 GPA in teaching major and teaching minor courses to qualify for student teaching.

2. Complete the following required courses:
   - CSCI 105: Computer Fluency. (3)
   - CSCI 135 & 136: Fundamentals of Computer Science I & II. (6)
   - CSCI 232: Data Structures and Algorithms. (4)
   - CSCI 323: Software Science (3)
   - ITS 150: CCNA 1: Exploration (3)
   - EDU 497: Methods: 5-12 Computer Science (3).

B. Describe the planned implementation of the proposed program, including estimates of numbers of students at each stage.

This proposal requires one new course offering in T&L. All other courses are currently offered through the University of Montana’s CS department and/or Missoula College. We anticipate approximately 5-7 new students will enroll in this minor each year. While that number may sound low, training educators for grades 5-12 in the area of computer science is both critically needed and important for the state of Montana.

4. Need

A. To what specific need is the institution responding in developing the proposed program?

The rising demand for graduates with computer related skills is projected to be among the fastest growing fields between 2012-2022, and many of those jobs are among the highest paying in the nation (Vilorio 2014;
Richards and Terkanian, 2013). In the state of Montana, these same trends are evident. Some estimates suggest that the number of computer science (CS) graduates from Montana public colleges and universities meet approximately only 10% of statewide demand, again for well paying jobs (Dennison, 2013). A number of organizations have recently cropped up around the state to help alleviate this problem, such as the Montana High Tech Business Alliance started in 2014 (http://mthightech.org/), and CodeMontana.org (2013). The focus of these groups is to increase the number of students graduating with degrees in CS, and subsequently to increase the number of skilled young people who are able to live and work in the state of Montana—a result that would certainly boost its overall economy. A teaching minor in CS would provide an additional option for students interested in computer science education, and it would help train middle and high school teachers so that they are able to offer computer related courses in grades 5-12. More CS classes offered during earlier stages of students’ education by trained teachers will result in a more thorough understanding of the options available in a CS career, more diversity in CS, and a broader pipeline of incoming freshman who go on to major in CS and STEM degrees.


B. How will students and any other affected constituencies be served by the proposed program?

The CS teaching minor that we propose adding to our curriculum will fill a current void in the state, and it will establish UM as a leader in this area. The minor we envision will increase the number of educators from around the state who can effectively teach in the widely growing area of computer science, which will in turn increase the number of students who major in CS and find well-paying careers in the state and beyond.

C. What is the anticipated demand for the program? How was this determined?

We anticipate approximately 5-7 new students will enroll in this minor each year. This number is determined based on community interest and expressed need.

5. Process Leading to Submission

A. Describe the process of developing and approving the proposed program. Indicate, where appropriate, involvement by faculty, students, community members, potential employers, accrediting agencies, etc.

Over the past few months, faculty members and some staff from the UM departments of Computer Science, Teaching and Learning, and Missoula College have met and collaborated for this proposal. We completed the Intent to Plan documentation required by the Provost’s office in April of this year, and received the go-ahead to develop and submit a full proposal for the AY 16/17 curriculum review process. This same group reviewed statewide standards required for the new teaching minor and mapped each of them to the courses identified for the minor.
Montana Board of Regents
CURRICULUM PROPOSAL FORM

6. Resources

A. Will additional faculty resources be required to implement this program? If yes, please describe the need and indicate the plan for meeting this need.

No additional faculty or funding is required to offer this minor.

B. Are other, additional resources required to ensure the success of the proposed program? If yes, please describe the need and indicate the plan for meeting this need.

None.

7. Assessment

A. How will the success of the program be measured?

Success of the program will be measured by the number of students who enroll and graduate with the teaching minor. We anticipate that these students will go on to teach Computer Science at the high school level, both in the state of Montana and beyond. This should result in additional computer science coursework being available in high schools, which in turn will create more opportunities for students to discover and major in the burgeoning field of computer science.