Please attach/submit additional documents as needed to fully complete each section of the form. See information about Level I Proposals.

I. DEPARTMENT / PROGRAM

Computer Science

II. SUMMARY

This certificate recognizes a student’s achievement in completing a series of courses where computational techniques are applied to problems in biology.

This 12 credit certificate is comprised of an introductory programming course followed by a course specifically in Computational Biology (Bioinformatics) and cemented with two electives where these skills are cemented with practice.

IV. ENDORSEMENTS AND APPROVALS

Requestor: Douglas Raiford
Phone/ Email: douglas.raiford@umontana.edu 406-243-5605
Program Chair: Douglas Raiford
*Other Affected Programs: DBS
Charlie Janson
Bruce Baucom
Broder Program
Dean: Chris Comer
Provost’s Office:

* Are affected because of: (a) required courses including prerequisites or corequisites, (b) perceived overlap in content areas, or (c) cross-listing of coursework.
After the Faculty Senate approves the proposal on a consent agenda the Provost’s Office forwards the item for Board of Regents approval at the next possible meeting.
V. TYPE OF LEVEL I PROPOSAL

☐ Retitling existing majors, minors, options, or certificates
☐ Eliminating existing majors, minors, or options. (submit with BOR program termination checklist)
☐ Adding new minors or certificates where there is a major or an option in a major*
☒ Campus Certificates: Adding, retitling, terminating or revising a certificate of 29 or fewer credits
☐ Revising a program* (for minor modifications use the program modification form)
☐ Distance or online delivery of previously authorized degree or certificate program
☐ Adding option within an existing major or degree *
☐ Consolidating existing programs and/or degrees *
☐ Placing a program into moratorium
☐ Withdrawing a program from moratorium
☐ Adding BAS/AA/AS Area of Study

*Must submit with BOR Curriculum Proposal Form

III. JUSTIFICATION

The biological sciences have become inundated with data. Many experiments, such as sequencing, expression experiments, NMR, Mass Spec, etc., generate gigs and even terabytes of data. This 12 credit certificate introduces the student to computational techniques useful in analyzing and manipulating such large quantities of data.
IV. CATALOG LANGUAGE

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

Certificate in Bioinformatics

The Biological Sciences have become more and more data intensive. Many biological biochemistry experiments, including genomic sequencing, gene expression experiments, Nuclear Magnetic Resonance, Mass Spec, etc., generate huge quantities of data. This certificate ensures that the student has the computational skills necessary to analyze and manipulate such large quantities of data.

Certificate in Bioinformatics Requirements

Required Courses (6 credits)

CSCI 135 Fundamentals of Computer Science I or CSCI 250 Computer Modeling/Science Majors
or BIOB 488 Programming for Biology
CSCI 451 Computational Biology

Elective courses (6 credits) student must complete one of the following courses

BIOB 486 Genomics
BIOB 488 Programming for Biology (if not taken as core)
BCH 480 Adv Biochem
CSCI 448 Pattern Recognition
CSCI 444 Data visualization

VI SUBMISSION

Submit the complete Level I proposal to the Provost’s Office for initial review. After all signatures have been obtained, submit original, and an electronic file to the Faculty Senate Office, UH 221, camie.foos@mso.umont.edu

Level 1 proposals also require Board of Regents approval. The appropriate BOR forms must be submitted with this form.
Montana Board of Regents
ACADEMIC PROPOSAL REQUEST FORM

Item Number: XXX-XXXX-XXXXX  Meeting Date: ________________
Institution: University of Montana  CIP Code: __________________________
Program Title: Certificate in Bioinformatics

Please mark the appropriate type of request and submit with an Item Template and any additional materials, including those listed in parentheses following the type of request. For more information pertaining to the types of requests listed below, how to complete an item request, or additional forms please visit the Academic Affairs Handbook.

A. Notifications:

1a. Placing a program into moratorium (Document steps taken to notify students, faculty, and other constituents and include this information on checklist at time of termination if not reinstated)

1b. Withdrawing a program from moratorium

2. Intent to terminate an existing major, minor, option or certificate – Step 1 (Phase I Program Termination Checklist)

X 3. Campus Certificates- Adding, re-titling, terminating or revising a campus certificate of 29 credits or less

4. BAS/AA/AS Area of Study

B. Level I:

Level I proposals are those that may be approved by the Commissioner of Higher Education. The approval of such proposals will be conveyed to the Board of Regents at the next regular meeting of the Board.

1. Re-titling an existing major, minor, option or certificate

2. Adding a new minor or certificate where there is a major or an option in a major (Curriculum Proposal Form)

3. Revising a program (Curriculum Proposal Form)

4. Distance or online delivery of an existing degree or certificate program

5. Terminating an existing major, minor, option or certificate – Step 2 (Completed Program Termination Checklist)

Temporary Certificate or AAS Degree Program

Approval for programs under this provision will be limited to two years. Continuation of a program beyond the two years will require the proposal to go through the normal Level II Proposal approval process.
Montana Board of Regents
ACADEMIC PROPOSAL REQUEST FORM

C. Level I with Level II Documentation:

This type of proposal may go to the Board as a Level I item if all Chief Academic Officers are in agreement. If consensus among the Chief Academic Officers is not reached, however, the item will go to the Board as a Level II request.

1. Consolidating existing programs and/or degrees (Curriculum Proposal Form)

D. Level II:

Level II proposals require approval of the Board of Regents. These requests will go to the Board in a two-meeting format, the first being as informational and the second as action.

1. Re-titling a degree (ex. From B.A. to B.F.A)

2. Adding a new minor or certificate where there is no major or option in a major (Curriculum Proposal Form)

3. Establishing a new degree or adding a major or option to an existing degree (Curriculum Proposal Form)

4. Forming, eliminating or consolidating a college, division, school, department, institute, bureau, center, station, laboratory or similar unit (Curriculum Proposal Form or Center Proposal Form, except when eliminating or consolidating)

5. Re-titling a college, division, school, department, institute, bureau, center, station, laboratory or similar unit

Specify Request: request the creation of a 12 credit Certificate in Computer Programming