Curriculum Proposal

BIOL 19-20 #3

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BSU Curriculum Forms

Form 1

Curriculum Modification Summary

College: College of Business, Mathematics & Science
Department: Biology
Proposer: Andrew Arsham
Proposer’s position: Assistant Professor

Describe the modification(s) you propose, and how it (they) will work to students' advantage. (This description and explanation will be included in Curriculum Report packets forwarded to the Faculty Senate.):
This modification adds goal area 11 to existing course BIOL3338 Science Communication Lab. This course is only taken by students in BSU’s transfer pathway partnership at North Hennepin Community College who have access to few if any BSU goal area 11 courses.

Modifications proposed (specify number of each):

_X___Course Modification(s) (form 2)
_____New Course(s) (form 3)
_____Course Drop(s) (form 4)
_____Program Modification(s) (form 5)
_____New Program(s) (form 6)
_____Program Drop(s) (form 7)

The modifications affect (check):

_x___Liberal Education
_____Undergraduate Curriculum
_____Graduate Curriculum
_____Teacher Licensure Program(s)
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Form 2
Updated 9.19.15

Course Modification Form

Current Course Number(s):
   Undergraduate:
   Graduate:
Proposed Course Number(s), if different:
   Undergraduate:
   Graduate:

Current Course Title: Science Communication Lab
Proposed Course Title, if different:

Current Course Description:
All students in the Biology Baccalaureate Partnership at North Hennepin Community College are expected to co-enroll in this 1 credit face-to-face section on the NHCC campus when taking BIOL 3337 online. The on-campus discussion section will cover supplementary topics and material and is intended to build scientific community and communications skills among the BBP cohort. The lab section will not impact the main course grades. Co-requisite BIOL 3337.

Proposed Course Description, if different:

Note: Only change is to add Liberal Education Goal Area 11 to this course.

All students in the Biology Baccalaureate Partnership at North Hennepin Community College are expected to co-enroll in this 1 credit face-to-face section on the NHCC campus when taking BIOL 3337 online. The on-campus discussion section will cover supplementary topics and material and is intended to build scientific community and communications skills among the BBP cohort. The lab section will not impact the main course grades. Co-requisite BIOL 3337. Liberal Education Goal Area 11.

Current Credits: 1
Proposed Credits, if different:

Current Prerequisite(s):
   Undergraduate: Co-requisite BIOL 3337
   Graduate:
Proposed Prerequisite(s), if different:
   Undergraduate:
   Graduate:
1) Reason(s) for change(s): 
**This modification adds goal area 11 to the existing course.**

2) May this modified course replace the current course for students remaining in the old curriculum? Yes ___X___ No _____ If not, please drop the current course and submit a new course form for the modification.

3) Do these modifications change any of the following? **For all Yes answers, please provide updated information on the next page.**

   - Student Learning Outcomes Yes _____  No _X___
   - Major Content Areas Yes _____  No _X___
   - Projected Maximum Class Size (Cap) Yes _____  No _X___

4) Current Course fee(s) per student: $
   for:
   Proposed Course fee(s) per student, if different: $
   for:

5) Service Areas:
   This course is a requirement or an elective in the programs/areas listed below. To locate where this course appears please search the online catalog, as follows:
   a) go to [http://www.bemidjistate.edu/academics/catalog/](http://www.bemidjistate.edu/academics/catalog/) and choose the most recent catalog(s).
   b) click on “Areas of Study, and Course Descriptions,”
   c) click on “PDF of Entire Catalog” in upper right,
   d) press Ctrl F, and enter the prefix and number of the course(s) from this form.

   - Non-licensure programs: n/a
   - Teacher Licensure programs:

   Liberal Education:

   The above “service area” programs/departments were notified of this modification on _______ (date) by ____________________ (mail, email, or phone).

   Please check one of the items below:

   ______  No comments were received from other programs or departments within one week of the notification.

   ______  Comments were received within one week of the notification, and are attached.
BSU BIOL 3338 Science Communication Lab Syllabus 2017 Fall

The Basics
BIOL3338
Face to Face Lab for BBP students at NHCC - 1 credit
https://bemidjistate.ims.mnscu.edu/d2l/home/3289260
BSU IT HelpDesk
Office Hours (appointments are highly recommended):
M W 9-11a
M Tu W Th 330-5p

Unless otherwise noted, all face-to-face BSU courses on NHCC’s campus will follow the NHCC schedule for holidays, breaks, and class cancellations.

Course Description, Values, and Policies
Students enrolled in the Biology Baccalaureate Partnership at North Hennepin Community College are required to take a 1-credit lab section accompanying online BIOL 3337 Scientific Communication. The lab will cover supplementary topics and material and will not impact the main course grades.

Learning Objectives
By the end of the semester, students should be able to:
1. present face-to-face oral communications with clearly defined goals and appropriately scaled information content and complexity
2. discuss and critique their own and others’ work effectively and generously
3. analyze and discuss sensitive topics and issues related to the responsible conduct of research, and equity in science

Course Structure
The course will be broken down into 4 major content units. Each unit will last from 3-4 weeks and will use a wide variety of methods (discussion, writing, thinking, individual work, group work, problem sets, tests, quizzes, and presentations) to give all students as many opportunities as possible to learn in different styles. There will be a fair amount of writing, in and out of class, which will give you the chance to think through your ideas and will give me a chance to see how you are grappling with the material. This structure requires your focused engagement with the material and with your classmates.

Most of the coursework will be structured around a genetics research topic of your choice. In the first few weeks of the semester, each of you will select a scientific question that interests you—it is important that you’re excited about the question since it will provide the material for many of our short graded and ungraded communications exercises and all of our major assignments. During the first weeks we will spend time in class discussing, sharing, and workshopping these questions so that everyone has a good one. The topic must fulfill the following criteria:
- There must be a substantial scientific literature about the topic
- There must be substantial non-scientific material about the topic (online, newspaper, magazines, etc.)
- The topic should be something that will sustain your interest for the semester and that you will be excited to learn about and communicate to a variety of scientific and non-scientific audiences
- The topic must be related to genetics or gene expression, broadly defined

At the end of the semester we will take time to work on individual final projects that integrate newly acquired skills and content into a research poster, a written grant proposal, and oral presentations.

Learning Community
Science is a communal endeavor that requires openness, communication, and lots and lots of wrong answers—fear of confusion and fear of being wrong are fundamental impediments to our growth as scientists. Everybody has the tools to practice science and scientific thinking, and this course will model the scientific values of openness and communication. You aren’t expected to know all the answers in class; you are expected to actively engage with your community in a search for answers. Wrong answers give us all the opportunity to improve our understanding; share your ideas, share your confusion, and we might all get smarter together.

Course Communications
We will rely heavily on internet access for course communications—if you do not have consistent access to a computer and a quality internet connection outside of class, please contact me as soon as possible. Laptops or tablets are frequently useful in class—if you do not have a mobile computing device larger than a phone, please let me know as soon as possible.

As a BSU student, you may install Microsoft Office 365 on your personal computer, and I suggest you do so. Instructions are here.

Email will be our primary communications channel outside the classroom. You must check your BSU email address at least once a day. I will check my email at least twice a day Monday through Friday, and will do my absolute best to respond to weekday emails within 24-48 hours—students should plan to do the same. Here are email configuration instructions for iOS, Android, and Outlook. I expect you to read email from me within a day of my sending it, and I expect a response if one is asked for.

The other major communications component for the course will be the Brightspace (aka D2L) online learning environment. All readings, assignments, grades, and feedback will be distributed and completed through Brightspace. If access to Brightspace is a problem, alert me right away. Within Brightspace, various technical support and policy information are in the “HelpLinks” box on the right side of the course home screen.

Other technical support can be found in the BSU IT Knowledge Base and the Help Desk (218 755-4207 or studenthelp@bemidjistate.edu)

Inclusiveness and Accommodation
My goal is to create an accessible environment where everyone has the opportunity to learn and to succeed, and I try to design my courses accordingly—please let me know if there are things I can do to make this course more accessible or more compatible with assistive technologies. In addition, institutional resources are available:
- BSU has a Disability-Related Accommodations and Access Policy Manual (word doc) and Disability Services Office, (218-755-3883, disabilityservices@bemidjistate.edu) which provide academic
accommodations for students with documented disabling conditions enrolled online or on-campus courses.

- For classes on NHCC’s campus, students needing additional accommodation can contact Tom Lynch (tlynch@nhcc.edu, 763-493-0556), the Director of Access Services at NHCC to discuss accommodations. Be sure to mention at the outset that you are in the BSU Biology program so he knows to coordinate with BSU.

**Attendance and Lateness**
Classroom participation, group work, and in-class writing require attendance. As soon as you know you will be absent or late for a class, email me. If you check with me ahead of time or have an emergency that you tell me about immediately, I will gladly accept assignments within 24 hours of the missed class with no penalty. For longer absences and illnesses, we will come up with a catch-up plan and due dates.

If you miss an in-class or online assignment without notice or explanation, it will be graded as a zero.

**Academic Integrity**
Academic and research integrity are non-negotiable. Academic dishonesty will not be tolerated, and students are expected to follow BSU’s Academic Integrity Policies. The most basic rules of thumb are:

- never take credit for work or ideas that are not yours
- always cite your sources, even if it’s an idea you got from one of your classmates over lunch

Plagiarism in written assignments, including online discussion, is a very serious offense and can lead to a failing grade in the course and to notification of department chair and/or dean. Students are encouraged to email me with any questions regarding plagiarism or academic dishonesty.

**Online Journal and Database Access**
Many of our readings will be part of subscription databases that require logging in to the BSU library using your 14-digit ID located under the barcode of your BSU ID—the default password is your last name, all lowercase. Details are covered in a PDF tutorial. You should have been mailed a BSU student ID card—if you do not have one, email the Extended Learning office immediately. If you cannot log in to BSU’s library, let me know.

**Grading**
Grading will be on the basis of attendance and participation in discussions (1/3), in-class writing assignments (1/3), and on presentations (1/3).

**Bemidji State University Policies**
As BSU students, you have access to a variety of student services and advising resources. The BSU Student Handbook includes policies governing course withdrawal and tuition, and a student code of conduct, which states that:

- Students will work as honest and respectful partners with the University in fulfilling its academic and administrative mission and responsibilities, fulfilling their academic endeavors in an honest and forthright manner.

- Students will speak and listen to others with care, seeking personal understanding and maintaining respect and civility.

- Students will respect and protect the personal privacy, rights, and safety of others with regard to physical and sexual boundaries, living space, possessions, electronic accounts and academic endeavors.
Course Calendar (scheduled class cancellations in red)

Unit 1: Who Are We, What is Science, and Why and How is it Communicated?

Unit Objectives
At the end of this unit, students should be able to:
1. Navigate (and know the difference between) the formal scientific literature and science journalism and social media
2. Identify and explain the parts of a scientific paper and their purposes
3. Build a personal annotated digital library using Zotero
4. Assign styles in Microsoft Word and use them to easily and quickly change the look and feel of a document
5. Identify an important current question in genetics and, using the scientific method, outline the current state of knowledge and potential future directions

Unit Content
1.1 (Week 1): Getting to know each other, and thinking about how we know what we know (and what we don't)
1.2 (Week 2): Introduction to science communication; science research, news, blogs, and tweets
1.3 (Week 3): To see the world in a grain of sand, hit the scientific literature- but first you have to find the right grain
1.4 (Week 4): Sorting sand - Buddha at the beach

Unit 2: The Responsible Conduct of Research

Unit Objectives
At the end of this unit, students should be able to:
1. Use role play and discussion to recognize examples of scientific misconduct, distinguish between misconduct and fraud, and model ethical and constructive responses
2. Create a personal values statement about diversity and equity in science and propose concrete steps, if any are necessary, to pursue those values

Unit Content
2.1 (Week 5): Science is always hard, and often wrong, and sometimes fraudulent - what are the reasons (and how can we tell them apart)?
2.2 (Week 6): Interactive movie: “The Lab!”
2.3 (Week 7): Science, society, and diversity: who does science and does it matter?

Unit 3: Statistics and Data Visualization

Unit Objectives
At the end of this unit, students should be able to:
1. Understand the meaning, importance, limitations, and abuses of statistical significance, and make quality judgements regarding statistical tests in the scientific literature
2. Correctly use the appropriate statistical test in common data analysis scenarios
3. Create high quality data visualizations based on an understanding of underlying principles of graphic design and data transparency
4. Use standard and advanced data analysis features of Microsoft Excel including table formatting, conditional formatting, sparklines, and graphs.
Unit Content
3.1 (Week 8): Principles of data visualization, featuring Edward Tufte
3.2 (Week 9): Microsoft Excel: nobody loves it, everybody uses it, and almost nobody uses it well
3.3 (Week 10): What is the meaning of significance?
3.4 (Week 11): Do it again! Science’s “reproducibility crisis”

Unit 4: Written and Oral Communications
Unit Objectives
At the end of this unit, students should be able to:
1. Write about complex scientific topics with vibrant and clear prose
2. Communicate data and ideas with audience- and format-appropriate detail and information density
3. Write a compelling and fundable research proposal based on existing data and models
4. Use Microsoft PowerPoint to create rigorous, informative, high quality slide decks and posters for formal and informal presentations
5. Critique and improve their own and each other’s work with rigor, compassion, and generosity

Unit Content
4.1 (Week 12): The return of Tufte – did PowerPoint blow up the space shuttle?
4.2 (Week 13): Creating and presenting posters
4.3 (Week 14): Authorial voice and known and unknown unknowns
4.4 (Week 15): My mind on my money and my money on my mind - writing grants

Final Presentations and Debrief (Week 16):
BSU Curriculum Forms
Form 8
Updated: 09.18.15

Signatures

_Andrew Arsham / Assistant Professor / 5.9.19________________________
Proposer / Title / Date

_Michael Hamman (for Mark Wallert) / Biology / 5.15.19________________________
Chair or Director / Department or Program / Date
Note: "All departmental recommendations [on curriculum] must be reviewed and approved by
the department's faculty."--IFO/MnSCU Master Agreement

At this point, packet goes to Records Office/Curriculum Coordinator to be logged in to the
Curriculum Proposal Progress Grid.

_Bonnie Higgins / Business Mathematics and Sciences / 6.3.19________________________
Dean / College / Date

Note: If proposal is sent back to the Proposer, please notify the Curriculum Coordinator.
If approved, packet goes to Academic Affairs Office.