Revision of MSEd in Adolescence Mathematics and Adolescence Biology, Chemistry, Earth Science or Physics

The College at Brockport, College Senate

Follow this and additional works at: https://digitalcommons.brockport.edu/senate_resolutions

Part of the Higher Education Commons

Repository Citation
The College at Brockport, College Senate, "Revision of MSEd in Adolescence Mathematics and Adolescence Biology, Chemistry, Earth Science or Physics" (2013). College Senate Resolutions. 376.
https://digitalcommons.brockport.edu/senate_resolutions/376

This Resolution is brought to you for free and open access by Digital Commons @Brockport. It has been accepted for inclusion in College Senate Resolutions by an authorized administrator of Digital Commons @Brockport. For more information, please contact kmyers@brockport.edu.
Resolution # 14 2012-2013
College Senate

Supersedes Res #: __________________

TO: Dr. John R. Halstead, College President
FROM: The College Senate: 4/22/2013
RE: I. Formal Resolution (Act of Determination)
II. Recommendation (Urging the Fitness of)
   III. Other, For Your Information (Notice, Request, Report, etc.)

SUBJ: Revision of MSEd in Adolescence Mathematics & Science
       (#38_12-13GC)

Signed: ________________________________ Date: 4/24/13
(Mark Chadsey, 2012-13 College Senate President)

Please fill out the bottom portion and follow the distribution instructions at the end of this page.

TO: Mark Chadsey, College Senate President
FROM: John R. Halstead, College President
RE: I. Decision and Action Taken on Formal Resolution (circle choice)
   a. Accepted - Implementation Effective Date**: Spring 2014
   b. Deferred for discussion with the Faculty Senate on ___/___/___
   c. Unacceptable for the reasons contained in the attached explanation

II, III. Response to Recommendation or Other/FYI
   a. Received and acknowledged ___/___/___

Signed: ________________________________ Date: 4/30/13
(Dr. John R. Halstead, President, The College at Brockport)

DISTRIBUTION:
Upon approval, the College President will forward copies of resolutions to his staff who will, in turn, forward copies to their staff. The College Senate Office will post resolutions to the College Senate Web at http://www.brockport.edu/collegesenate/resolutions
COLLEGE SENATE OFFICE
RESOLUTION PROPOSAL COVER PAGE
DEADLINE FOR SUBMISSIONS: FEBRUARY 28
Incomplete proposals will be returned and proposals received after the deadline may not be reviewed until next semester.

INSTRUCTIONS

- Use committee guidelines available at brockport.edu/collegesenate/proposal.html.
- Prepare ONE complete document in Word format: include this proposal cover page, proposal, attachments and support letters from your department chair and dean if applicable.
- Locate the Resolution # and date this proposal will replace at our “Approved Resolutions” page on our Web site.
- Email completed proposal to senate@brockport.edu. (General Education Proposals and questions go to dlamphron@brockport.edu in the Vice Provost’s Office first.)
- Make revisions on the paperwork emailed to you from the Senate office that shows the assigned routing number on top. Submit updated document to senate@brockport.edu.
- Questions? Call the Senate office at 395-2586 or the appropriate committee chairperson.

1. PROPOSAL TITLE: Please be somewhat descriptive, ie. Use a course number and/or title, indicate if for GED code, etc.
   Revision of MSEd in Adolescence Mathematics and Adolescence Biology, Chemistry, Earth Science or Physics

2. BRIEF DESCRIPTION OF PROPOSAL:
   This proposal seeks to revise the current MSEd in Adolescence Mathematics and the MSEd in Adolescence Biology, Chemistry, Earth Science or Physics programs in the following ways: Replace the nine credits of Mathematics Education and Science Education courses with 12 credits in STEM Education that will be common across both programs, and eliminate one three-credit elective and one three-credit research course in each program. The combined changes will reduce the current 33 credit MSEd in Adolescence Mathematics and MSEd in Adolescence Biology, Chemistry, Earth Science and Physics to 30 credits.

3. WILL ADDITIONAL RESOURCES AFFECTING BUDGET BE NEEDED? _X__ NO ___ YES
   EXPLAIN YES

4. DESCRIBE ANY DATA RELATED TO STUDENT LEARNING OUTCOMES ASSESSMENT USED AS PART OF THE RATIONALE FOR THE REQUESTED SENATE ACTION.
   NA

5. HOW WILL THIS AFFECT TRANSFER STUDENTS: NA

6. ANTICIPATED EFFECTIVE DATE:
   Spring 2014

7. SUBMISSION & REVISION DATES: PLEASE DATE ALL REVISED DOCUMENTS TO AVOID CONFUSION.
   First Submission | Updated on | Updated on | Updated on
   02/28/13

8. SUBMITTED BY: (contact person)
   Name | Department | Phone | Email
   Don Halquist | Education and Human Development | 5550 | dhalquis@brockport.edu

9. COMMITTEES: (Senate office use only)
   Standing Committee | Forwarded To | Dates Forwarded
   __ Executive Committee | Standing Committee | 3/4/13
   __ Enrollment Planning & Policies | Executive Committee | Senator
   __ Faculty & Professional Staff Policies | | |
   __ General Education & Curriculum Policies | Passed GED’s go to Vice Provost | |
   X Graduate Curriculum & Policies | College President | |
   __ Student Policies | OTHER | |
   __ Undergraduate Curriculum & Policies | REJECTED -WITHDRAWN | |

NOTES:
Revision of Existing Academic Programs

Rationale
This proposal seeks to revise the current MSEd in Adolescence Mathematics and the MSEd in Adolescence Biology, Chemistry, Earth Science or Physics in the following ways:

1. Replace the nine credits of Mathematics Education and Science Education courses with 12 credits in STEM Education that will be common across both programs.
2. Eliminate one three-credit elective and one three-credit research course in each program.

The combined changes will reduce the current 33 credit MSEd in Adolescence Mathematics and MSEd in Biology, Chemistry, Earth Science, Physics to 30 credits.

We are seeking to revise the current MSEd in Adolescence Mathematics and MSEd in Adolescence Biology, Chemistry, Earth Science, Physics for several reasons, including:

1. The number of students entering each program makes it unsustainable to continue them as separate programs. On average, four students enroll in the MSEd in Adolescence Mathematics Education each semester while one student enrolls in one of the MSEd in Adolescence Biology, Chemistry, Earth Science, Physics Education programs each semester.
2. The four proposed STEM Education courses integrate pedagogy, theory and research across Mathematics and Science education. This sequence of four courses replaces a sequence of subject specific pedagogy, theory and research courses in the current programs. Students from both programs will enroll in these courses, allowing us to combine and better use resources, while at the same time creating rich, integrated learning experiences.
3. The four proposed STEM Education courses are designed with a K-12 content/focus. We are submitting a separate proposal to revise the current MSEd in Elementary Education to include a concentration in STEM Education. Students enrolled in the STEM concentration of the Elementary Education MSEd program will also complete the sequence of STEM Education courses proposed here, thus further increasing enrollment in those courses.

This proposal maintains the alignment of six credits of core curriculum (EDI 601 and EDI 603) and the 12 credits of liberal arts credits, which the New York State Education Department (NYSED) defines as content linking, for the Adolescence Mathematics and Adolescence Biology, Chemistry, Earth Science, Physics programs.

Eighteen of the 30 credits in the proposed programs (6 credits of core credits plus the 12 credits of STEM Education course work) will be delivered in an online format. Seventy-two percent (13 of 18) full-time faculty in the Department of Education and Human Development are currently teaching or have taught online or hybrid courses. Seventy-five percent (3 of 4) of the full-time faculty slated to teach the proposed STEM Education courses are teaching or have taught online or hybrid courses.

Students may take the 12 liberal arts content linking courses in either Mathematics or the Sciences as face-to-face, hybrid, or online courses. Among the letters of support is one from the Dean of the School of Science and Mathematics, and while the proposal does not include letters of support from the chairs of the Departments of Mathematics and Biology regarding their ability to commit to offering hybrid or online graduate courses, our discussions with them have been positive and encouraging and are continuing.
Curriculum of the current program and of the proposed revised curriculum
As indicated above the proposed programs eliminate one three-credit elective and one three-credit research course in each program. Some of the content from the eliminated EDI 600 Understanding Educational Research course will be infused across the four new STEM Education courses.

Proposed Course work for Concentration in Science, Technology, Engineering and Mathematics (STEM) Education

EDI 6XX Introduction to STEM Pedagogy, K-12
**Course Catalog Description:** Explores research-based STEM pedagogy in K-12 school settings including: inquiry, science practices, engineering as problem-solving, project-based design, modeling (including grade-appropriate mathematical or computational modeling), cross-curricular integration, and technology integration. Focuses on psychological aspects of teaching and learning, modeling of research-based teaching practices, and effective instruction adaptable for all grades and contemporary classroom technologies.

EDI 66X Contemporary Trends and Issues in STEM Education, K-12
**Course Catalog Description:** Critical examination of contemporary trends and issues of STEM education pedagogies and practices in K-12 school settings. Topics include: pedagogies for integrating STEM knowledge and skills; technological tools and modules developed by nationally recognized science, mathematics, and engineering organizations such as NASA, NSTA, and NCTM; and issues such as equity and ethics in STEM education, including gender, race, diversity, and research ethics. Examination of theoretical and research platforms for the integration of STEM knowledge and pedagogies.

EDI 67X Problem Solving in STEM Education, K-12
**Course Catalog Description:** Exploration of cross-cutting themes meeting national content-area standards in mathematics, science and engineering found in the K-12 Frameworks, NCTM and NRC Standards: patterns; cause and effect; scale, proportion and quantity; systems and system models; energy and matter; structure and function; stability and change. Creation of curricular modules within the respective STEM content-areas highlighting the role each plays in a particular context (e.g., aligning teaching modules with current research on topics such as improving fuel efficiency of cars, or using biofuels to heat public buildings).

EDI 78X Capstone in STEM Education, K-12
**Course Catalog Description:** Completion of the capstone is a scholarly experience that enhances students’ professional goals, and holds demonstrable significance for the field, for teaching practice, or for administration. The capstone project is negotiated between the student and the capstone advisor. Viable capstone projects may include traditional original research theses, curriculum development projects, STEM Education modules, or others as deemed appropriate.
Proposed MSEd in Adolescence Mathematics Education (30 credits)
Concentration in Science, Technology, Engineering and Mathematics (STEM) Education

For students initially certified in Adolescence Mathematics

<table>
<thead>
<tr>
<th>Current MSEd Adolescence Mathematics</th>
<th>Credits</th>
<th>When Offered</th>
<th>Proposed MSEd Adolescence Mathematics with Concentration in STEM</th>
<th>Credits</th>
<th>When Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDI 600 Understanding Educational Research</td>
<td>3</td>
<td>fall/spring/summer</td>
<td>Eliminated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDI 601 Diversity in Education in a Pluralistic Society</td>
<td>3</td>
<td>fall/spring/summer</td>
<td>EDI 601 Diversity in Education in a Pluralistic Society</td>
<td>3</td>
<td>fall/spring/summer</td>
</tr>
<tr>
<td>EDI 603 Educational Assessment and Evaluation</td>
<td>3</td>
<td>fall/spring</td>
<td>EDI 603 Educational Assessment and Evaluation</td>
<td>3</td>
<td>fall/spring</td>
</tr>
<tr>
<td>EDI 686 Issues in Adolescence Mathematics Education</td>
<td>3</td>
<td>Fall</td>
<td>Eliminated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDI 622 Advanced Adolescence Curriculum Mathematics</td>
<td>3</td>
<td>Spring</td>
<td>Eliminated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDI 792 Seminar in Mathematics Education</td>
<td>3</td>
<td>Fall</td>
<td>Eliminated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6XX Introduction to STEM Pedagogy, K-12</td>
<td>3</td>
<td>fall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>66X Contemporary Trend and Issues in STEM Education, K-12</td>
<td>3</td>
<td>spring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67X Problem Solving in STEM Education, K-12</td>
<td>3</td>
<td>fall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>78X Capstone in STEM Education</td>
<td>3</td>
<td>Spring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liberal Arts (select from MTH 500 level or higher)</td>
<td>12</td>
<td>fall/spring/summer</td>
<td>Liberal Arts (select from MTH 500 level or higher)</td>
<td>12</td>
<td>fall/spring/summer</td>
</tr>
</tbody>
</table>

Total credits 33  Total credits 30
#### Proposed MSEd in Adolescence Biology, Chemistry, Earth Science or Physics Education (30 credits)

**Concentration in Science, Technology, Engineering and Mathematics (STEM) Education**

For students initially certified in Adolescence Biology, Chemistry, Earth Science or Physics

<table>
<thead>
<tr>
<th>Current MSEd in Adolescence Biology, Chemistry, Earth Science, Physics</th>
<th>Credits</th>
<th>When Offered</th>
<th>Proposed MSEd in Adolescence Biology, Chemistry, Earth Science, Physics with Concentration in STEM</th>
<th>Credits</th>
<th>When Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDI 600 Understanding Educational Research</td>
<td>3</td>
<td>fall/spring/summer</td>
<td>Eliminated</td>
<td>6XX Introduction to STEM Pedagogy, K-12</td>
<td>3</td>
</tr>
<tr>
<td>EDI 601 Diversity in Education in a Pluralistic Society</td>
<td>3</td>
<td>fall/spring/summer</td>
<td>EDI 601 Diversity in Education in a Pluralistic Society</td>
<td>3</td>
<td>fall/spring/summer</td>
</tr>
<tr>
<td>EDI 603 Educational Assessment and Evaluation</td>
<td>3</td>
<td>fall/spring</td>
<td>EDI 603 Educational Assessment and Evaluation</td>
<td>3</td>
<td>fall/spring</td>
</tr>
<tr>
<td>EDI 617 Advanced Methods in Science</td>
<td>3</td>
<td>Fall</td>
<td>Eliminated</td>
<td>66X Contemporary Trend and Issues in STEM Education, K-12</td>
<td>3</td>
</tr>
<tr>
<td>EDI 623 Reading Research in Adolescence Science</td>
<td>3</td>
<td>Spring</td>
<td>Eliminated</td>
<td>67X Problem Solving in STEM Education, K-12</td>
<td>3</td>
</tr>
<tr>
<td>EDI 793 Seminar in Science Education</td>
<td>3</td>
<td>Fall</td>
<td>Eliminated</td>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>78X Capstone in STEM Education</td>
<td>3</td>
</tr>
<tr>
<td>Liberal Arts (select from BIO, CHM, ESC, or PHS 500 level or higher)</td>
<td>12</td>
<td>fall/spring/summer</td>
<td>Liberal Arts (select from BIO, CHM, ESC, or PHS 500 level or higher)</td>
<td>12</td>
<td>fall/spring/summer</td>
</tr>
</tbody>
</table>

**Total credits** 33  
**Total credits** 30
<table>
<thead>
<tr>
<th>New STEM Courses</th>
<th>Prerequisites</th>
<th>Frequency of Offerings</th>
<th>Faculty Name, Rank/Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>6XX Introduction to STEM Pedagogy, K-12</td>
<td></td>
<td>fall</td>
<td>Younkyeong Nam, PhD Assistant Professor/Tenure Track</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Janka Szilágyi, PhD Assistant Professor/Tenure Track</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Peter Veronesi, PhD Associate Professor/Tenured</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Carol Wade, PhD Assistant Professor/Tenure Track</td>
</tr>
<tr>
<td>66X Contemporary Trends and Issues in STEM Education, K-12</td>
<td></td>
<td>spring</td>
<td>Younkyeong Nam, PhD Assistant Professor/Tenure Track</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Janka Szilágyi, PhD Assistant Professor/Tenure Track</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Peter Veronesi, PhD Associate Professor/Tenured</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Carol Wade, PhD Assistant Professor/Tenure Track</td>
</tr>
<tr>
<td>67X Problem Solving in STEM Education, K-12</td>
<td></td>
<td>fall</td>
<td>Younkyeong Nam, PhD Assistant Professor/Tenure Track</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Janka Szilágyi, PhD Assistant Professor/Tenure Track</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Peter Veronesi, PhD Associate Professor/Tenured</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Carol Wade, PhD Assistant Professor/Tenure Track</td>
</tr>
<tr>
<td>78X Capstone in STEM Education</td>
<td>66X and 67X</td>
<td>spring</td>
<td>Younkyeong Nam, PhD Assistant Professor/Tenure Track</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Janka Szilágyi, PhD Assistant Professor/Tenure Track</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Peter Veronesi, PhD Associate Professor/Tenured</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Carol Wade, PhD Assistant Professor/Tenure Track</td>
</tr>
</tbody>
</table>
New Faculty
No new faculty are required to implement and sustain the proposed revised programs.

Description of Any Additional Costs
The current library and ITS resources are sufficient to support the proposed revised programs. No additional costs will be incurred.

Effective Date of the Change
We will admit students to the proposed programs the semester following approval of the programs by SUNY and NYSED. Course substitutions will be used to support students’ completion of the current programs as appropriate.
To: Members of the Graduate Curriculum and Policies Committee
From: Don Halquist, Chair, Department of Education and Human Development
Re: Revision of MSEd in Adolescence Mathematics and MSEd in Adolescence Biology, Chemistry, Earth Science or Physics programs
Date: February 21, 2013

I write to offer my strongest support for the revised Adolescence Mathematics and the Adolescence Biology, Chemistry, Earth Science and Physics MSEd programs. As indicated in the proposal, our enrollment in these programs has declined to a point that continuing them raises concern, and reinforces the fact that we simply do not have the luxury of continuing to do business as usual. The good news is that I am surrounded by colleagues in the Department of Education and Human Development and from across campus who realize the severity of the situation, recognize the need for change and are willing to come together to create realistic and viable alternatives.

As outlined in the proposal, we anticipate that combining 12 credits of course work across the math and sciences MSEd programs, coupled with the existing six credits of core course work, will boost enrollment in both programs as well as our proposed revised MSEd in Elementary Education program (separate proposal). We also believe that combining the course work will enable us to maximize resources, maintain the significant level of quality and rigor that exists in the current programs while shifting the emphasis to STEM Education, an area identified by the National Science Foundation (NSF) as in need of improvement within the current education system in the United States. The 12 credits of STEM Education course work in the proposed programs are designed to enhance the scientific, technological, and mathematical capacity of teachers and in turn their students. Our two newest faculty—Dr. Younkyeong Nam and Dr. Carol Wade—have significant expertise in STEM education, which will enhance and contribute positively to the areas of expertise of the other faculty members slated to teach courses in the STEM concentration—Dr. Janka Szilágyi and Dr. Peter Veronesi.

Offering 18 of the 30 credits in the proposed programs (six credits of core credits plus the 12 credits of STEM Education course work) through an online format will enable graduate students flexibility in terms of access, time, pace and convenience, all aspects of learning important to adult learners. In addition, an online format will enable faculty and students to draw on web-based resources and technologies to facilitate and enhance communication, and teaching and learning opportunities.

Survey results from our current undergraduates indicate that they have a strong interest in online courses, and the online sections of our courses are consistently the first to fill and often generate a wait list. Thanks to the continued work of Eileen Daniel, Karen Schuhle-Williams, Ann Pearlman, Brendon Post and others, we have an infrastructure of support locally—IT and Special Sessions—and system-wide—SUNY Learning Network—to maintain functionality and sustainability.

As also indicated in the proposal, my colleagues have significant experience and success teaching in online and hybrid formats, and I fully expect given their motivation and interest that they will continue to excel in their efforts; in fact, it’s exciting to consider the possibilities.

The combination of these various factors indicates to me that the revised programs are well-positioned for success.
EHD Revision of MSEd programs

2/20/2013

Dear Don,

Please accept this email in support of the proposed revision of the EHD professional MSEd programs.

These proposals will be beneficial in at least three ways:
   1) Reduction of credits from 33 to 30;
   2) Creation of a set of common courses shared across all or some of the professional MSEd programs; and
   3) Provision of EHD courses (18 of 30 credits) in an online format.

Thank you for your work in revising these programs to serve the needs of our students.

Sincerely,

Douglas M. Scheidt, Ph.D.
Dean, School of Education & Human Services
Dean, Professional Education Unit
SUNY College at Brockport
350 New Campus Drive
Brockport, NY 14420

Voice: 585.395.2510
Fax: 585.395.2172
27 February 2013

Mark Chadsey, President
College Senate

Dear Mark,

I am writing to express my support for the proposal that the Department of Education and Human Development has prepared to offer MSEd programs by delivering all required EDI courses in the online format.

Sincerely,

[Signature]

Jose Maliekal, Dean
School of Science and Mathematics
To Whom It May Concern:

I support the proposed 30 credit MSEd program with a STEM concentration. This proposed program maintains academic rigor and quality, delivers a more efficient curriculum, and offers flexible instructional delivery that will appeal to many graduate students in the region and beyond.

Sincerely,

[Signature]

James Spiller
Dean of the Graduate School