Wilkes University Curriculum Committee

PROPOSAL SUBMITTAL FORM

Directions:

- Use this set of forms for all proposals sent to the Curriculum Committee.
- Pages 1-3 of this document are required. Any unnecessary forms should be deleted from the packet before submissions. If multiple forms are needed (course addition, course deletion, etc), simply copy and paste additional forms into this packet.
- Note that all new programs (majors and minors), program eliminations, significant program revisions and all general education core revisions must be reviewed and approved by the Provost and Academic Planning Committee (APC) prior to submission to the Curriculum Committee. The Provost will make the decision if a program revision requires APC review.
- Completed and signed forms are due no later than the first Tuesday of every month. Submit one signed original hard copy and a scanned electronic copy with all signatures to the Chair of the Curriculum Committee.

1. Originator: Karena Brace  
   Graduate Education  
   Phone: 570-408-7841  
   Email: karena.brace@wilkes.edu

2. Proposal Title: STEM Course Addition

3. Check only one type of proposal: (double click on the appropriate check box and change default value to “checked”).

☐ New Program. (Major or Minor Degree Programs). This requires prior review and approval by the Provost and APC.
☐ Elimination of Program. (Major or Minor Degree Programs). This requires prior review and approval by the Provost and APC.
☐ Program Revision. Significant revisions to a program require review and approval by the Provost. The Provost determines if review and approval by APC is necessary.
☐ General Education Revision. Submissions only accepted from the General Education Committee (GEC). Must be reviewed and approved by the Provost.
☐ Creation of new departments, elimination of existing department. This requires prior review and approval by the Provost and APC.
☒ Course additions or deletions not affecting programs (such as elective courses, transition of “topics” courses to permanent courses).
☐ Change in course credit or classroom hours.
☐ Incidental Changes. Includes changes in course/program title, course descriptions, and course prerequisites. (Although these changes do require approval by the Curriculum Committee, they do not go before the full faculty for approval).
☐ Other (Specify)
4. Indicate the number of course modification forms that apply to this proposal:

- [ ] Course Addition Form (plus syllabi)
- [ ] Course Deletion Form
- [ ] Course Change Form

5. Executive Summary of Proposal.

Briefly summarize this proposal. The breadth and depth of this executive summary should reflect the complexity and significance of the proposal. Include an overview of the proposal, background and reasoning behind the proposal and a description of how the proposal relates to the mission and strategic long-range plan of the unit and/or university. For incidental changes a one or two sentence explanation is adequate.

This proposal is for the development of an elective course in the Master of Science in Instructional Media and Discovery Education EDGE Letter of Endorsement. The course would focus on an approach to teaching and learning that is indicative of comprehensive STEM integration including changes to the classroom environment, methods of inquiry, and parental involvement. In order to enhance the experience of students, attendance will be required at the Discovery Education STEM Academy as a weeklong, hands-on component of the course. The Academy will encompass one unit of the 7-week course and the remaining 6 weeks will be conducted online (all EDIM courses are offered as 7-week courses).

Developed by the Global STEM Director at Discovery Education, Cindy Moss, this course supports the university’s mission, vision, and values as it offers students a mentor opportunity with an expert in the field of STEM and an innovative approach to learning via the integration of a face-to-face experience with renowned experts in STEM from Discovery Education combined with cutting-edge online content.

The development of this course has been necessitated by a number of factors. Because of the prominence in STEM initiatives within school districts, administrators and teachers are actively seeking courses specifically tailored to this topic. Additionally, current students in the Instructional Media program have repeatedly requested more integration of Discovery Education content. The ability to offer this course will allow Wilkes and Discovery Education to work collaboratively with school districts and teachers to offer STEM content at their district, thereby expanding the footprint of the university, the programs, and our ability to adapt to the changing educational needs of teachers.

6. Other specific information. (Not applicable for incidental changes.)

What other programs, if any, will be affected by this proposal? Describe what resources are available for this proposal. Are they adequate? What would be the effect on the curriculum of all potentially affected programs if this proposal were adopted? Include any potential effects to the curriculum of current programs, departments and courses.

The proposed course will impact the Instructional Media program and Discovery Education EDGE Letter of Endorsement. It will be added to the bank of electives for the program. Other Graduate Education programs will not be affected.
Discovery Education has committed to fund the development of this course so the proposal will not impact the Graduate Education budget. All course content, with the exception of the Discovery Education STEM Academy, will be the property of Wilkes University based on the development contract. In addition, there will be sufficient staffing to allow for the conversion of the course material into the learning management system.

7. Program Outline. (Not applicable for incidental changes).
   A semester-by-semester program outline as it would appear in the bulletin for a new program or any modified program with all changes clearly indicated.

**Instructional Media (IM)**

Foundations and pedagogy courses (21 credits)
- EDIM 501 Cognition and Technology: Aligning Brain-based Research and Technology Integration (3 credits)
- EDIM 502 Project-based Learning (3 credits)
- EDIM 503 Differentiation Supported by Technology (3 credits)
- EDIM 504 Digital Storytelling (3 credits)
- EDIM 507 Globalization and Advocacy (3 credits)
- EDIM 508 Digital Media in the Classroom (3 credits)
- ED 520 Using Assessment to Guide Instruction (3 credits)

Elective courses (choose 9 credits)
- EDIM 510 Web 2.0 Impacting Learning Environments (3 credits)
- EDIM 511 Portable Video Production and Application (3 credits)
- EDIM 513 Inquiry-based Learning (3 credits)
- EDIM 514 Internet Tools for Teaching (3 credits)
- EDIM 515 BYOD: Mobile Learning in Education (3 credits)
- EDIM 516 Sustaining Digital Literacy (3 credits)
- ED 587 Technology Leadership (3 credits)
- ED 569 Teaching Diverse Learners Using Inclusive Classroom Practices (3 credits)
- ED 5400 SAS for Pennsylvania Educators (3 credits)
- **EDIM 517 Teaching and Learning through STEM**

Discovery Education EDGE Letter of Endorsement

Required Courses
- EDIM 515 BYOD: Mobile Learning in Education (3 credits)
- EDIM 516 Sustaining Digital Literacy (3 credits)

Elective
- EDIM 510 Web 2.0 Impacting Learning Environments (3 credits)
- EDIM 511 Portable Video Production and Application (3 credits)
- EDIM 513 Inquiry-based Learning (3 credits)
- EDIM 514 Internet Tools for Teaching (3 credits)
- **EDIM 517 Teaching and Learning through STEM**
8. Signatures and Recommendations. (please date)
   • Signatures of involved Department chair(s) and Dean(s) indicate agreement with the proposal and that adequate resources (library, faculty, technology) are available to support proposal.
   • If a potential signatory disagrees with a proposal he/she should write “I disagree with this proposal” and a signed statement should be attached to this submission.

Print Name/Title: Director
Signature: [Signature]
Date: 6-19-2014

Print Name/Title: Dean
Signature: [Signature]
Date: 6-19-2014

Print Name: Registrar
Signature: [Signature]
Date: 7-10-14

Print Name
Signature
Date

Provost (For new programs, significant revisions and revisions to the General Education Program revisions only).
Provost should check here if this proposal is a program revision AND the significance of the revision requires review and approval by APC prior to Curriculum Committee.

Print Name
Signature
Date
Chair, Academic Planning Committee. For new programs, program revisions sent via the provost. Signature indicates that the proposal has been reviewed and approved by APC.

Print Name
Signature
Date
Chair, General Education Committee. For revisions to General Education program only. (Signature indicates that the proposal has been approved by GEC).
Wilkes University Curriculum Committee
COURSE ADDITION FORM – page 1

1. Course Title: Official title for course – as opposed to the popular title

2. Course Number: EDIM 517 Teaching and Learning through STEM
    Coordinate with Registrar to insure course number is available

3. Course Credit Hours:
    Classroom Hours 3     Lab Hours       Other

4. Course Prerequisites: None

5. Course Description (as proposed for the Bulletin):
   Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

   This course will provide students with a greater understanding of STEM teaching and learning as a pedagogical philosophy and culture. Topics focus on the creation of STEM lessons that incorporate hands-on inquiry, 21st century skills, STEM careers, research, and communication skills.

6. Required Documentation:
   Proposed Syllabus Attach proposed syllabus immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) informations, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.
Graduate Education Mission
The mission of the Graduate Education Department at Wilkes University is to provide the educational community with opportunities to become leaders in classroom instruction and in the administration of schools. As such, the Graduate Education Department seeks to promote the highest levels of intellectual growth and career development through a collaborative environment that supports teaching in a diverse learning environment, while valuing commitment to the educational communities it serves.

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EDIM 517</td>
<td>Teaching and Learning through STEM</td>
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<tr>
<th>Section/Semester</th>
<th>Location</th>
<th>Meeting Times</th>
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Instructor Contact Information

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>Office Hours (if applicable)</th>
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<tbody>
<tr>
<td>Dr. Cindy Moss</td>
<td>E-mail</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:Cindy_Moss@discovery.com">Cindy_Moss@discovery.com</a></td>
</tr>
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<tr>
<th>Phone Number</th>
<th>Best time(s) to be contacted</th>
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Course Description from Graduate Bulletin
This course will provide students with a greater understanding of STEM teaching and learning as a pedagogical philosophy and culture. Student will engage in an intensive, one-week STEM academy followed by online coursework, focusing on the creation of STEM lessons that incorporate hands-on inquiry, 21st century skills, STEM careers, research, and communication skills.

Required Textbook(s) & Readings

Recommended Reading List or Resources

Recommended Web Resources
- http://www.ed.gov/stem
- http://www.siemensstemacademy.com
- http://stem-works.com/
- http://www.stemcoalition.org/
- TEDx Talks- Growing Up in STEM- As a Girl- http://www.youtube.com/watch?v=700z06YRKHg
- http://www.pblearningmedia.org
- http://www.discoverer.org/
- http://www.afterschoolalliance.org/STEM.cfm
- bie.org/object/document/pbl_common_core_and_nextgen_standards
- http://www.sagepub.com/upm-data/56210_Dana_Ch_1.pdf

## Course Requirements & Assessments

<table>
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<tr>
<th>Student Learning Objectives</th>
<th>Evidence of Learning ~ Key Instructional Assignments, Activities, or Assessments ~</th>
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<tbody>
<tr>
<td>The students will:</td>
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| 1. Identify the rationale for integrating STEM along with the guiding principles for implementation. | • DE STEM Academy Reflection  
• STEM Integration Plan  
• Class Discussions |
| 2. Integrate multiple STEM disciplines to promote a cross-curricular approach to curriculum development. | • DE STEM Academy Reflection  
• Culminating STEM Lesson  
• Class Discussions |
| 3. Utilize STEM to improve alignment to standards and connect the elements of the curriculum | • DE STEM Academy Reflection  
• Culminating STEM Lesson  
• Class Discussions |
4. Develop assessments representative of the guiding principles of STEM integration.

- Culminating STEM Lesson
- Class Discussions

5. Promote an environment of inquiry both inside and outside the classroom.

- STEM Integration Plan
- Class Discussions

6. Utilize instructional strategies that complement STEM and reinforce 21st century skills.

- DE STEM Academy Reflection
- Culminating STEM Lesson
- Cyber-Investigation
- Class Discussions

7. Develop a plan for integration of STEM into the classroom.

- STEM Integration Plan
- Class Discussions

### Major Course Requirements and Assessments

<table>
<thead>
<tr>
<th>Requirement/Assessment</th>
<th>Description</th>
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<tbody>
<tr>
<td>DE STEM Academy Reflection (10%)</td>
<td>Students will develop a technology-infused reflection that outlines the following:</td>
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<tr>
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<td>• The importance of STEM integration</td>
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<td>• Challenges</td>
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<td>• Impact on teaching philosophy</td>
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<td>• Goals for students and the</td>
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| STEM Integration Plan (20%) | Students will develop a plan for integrating STEM into their classroom regardless of content area. The following criteria must be included:

- Current approach and primary instructional strategies used.
- Proposed changes to instruction and classroom environment.
- Examples of implementation at the three levels- Multidisciplinary, interdisciplinary, transdisciplinary
- Timeline for integration
- Plan for cross-curricular collaboration and professional development. |

| Culminating STEM Lesson (20%) | Students will identify a topic in the content area they currently teach and develop a STEM lesson plan that is standards aligned, includes at least two STEM disciplines, and includes a summative assessment. All elements must be in line with the guiding principles of STEM integration. |

<p>| Course Discussions (50%) | Students will actively engage in discussions related to the weekly course content. |</p>
<table>
<thead>
<tr>
<th>Unit</th>
<th>Topic(s) &amp; Readings</th>
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<tbody>
<tr>
<td>1</td>
<td><strong>Face-to-Face</strong>&lt;br&gt;Participation in Discovery Education STEM Academy *No online coursework in Unit 1</td>
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</table>
| 2    | **Begin Online Coursework**<br>STEM Practices  
• Guiding Principles  
• Classroom Environment/ Integration  
• Curricular Approach  
Readings  
• STEM Lesson Essentials- Chapters 1-6  
• http://www.stemcoaition.org/  
• http://www.ed.gov/steam |
| 3    | Technology and Engineering in a STEM classroom  
• Best practices for technology in the STEM classroom  
• Incorporating engineering into the classroom  
Readings  
• STEM Lesson Essentials- Chapters 7-10  
• Cyberlearning in STEM Education- http://www.pbslearningmedia.org  
• http://www.discovere.org/ |
| 4    | Getting Students to Ask Questions  
• Types of hands-on inquiry  
• Project based learning  
• Problem based learning  
Readings  
• STEM Lesson Essentials- Chapters 11&12  
• http://bie.org/object/document/8_essentials_for_project_based_learning  
• bie.org/object/document/pbl_common_core_and_nextgen_standards |
| 5    | STEM Outside the Classroom  
• Finding STEM partners in your community  
• Engaging parents in STEM  
• STEM competitions  
Readings  
• TEDx Talks- Growing Up in STEM- As a Girl- |
<p>| | |</p>
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| 6 | STEM Assessment  
- Performance tasks  
- Rubrics  

Readings  
- STEM Lesson Essentials- Chapter 13  
- [http://www.teachinquiry.com/index/Assessment.html](http://www.teachinquiry.com/index/Assessment.html)  
- The Common Core and Inquiry- [http://www.sagepub.com/upm-content/data/56210_Dana_Ch_1.pdf](http://www.sagepub.com/upm-content/data/56210_Dana_Ch_1.pdf) |
| 7 | Integrating STEM into the Curriculum  
- Writing a STEM lesson  
- Designing a STEM unit  

Readings  
- STEM Lesson Essentials- Chapters 14-17  
- [http://www.siemensstematcademy.com](http://www.siemensstematcademy.com)  
- [http://stem-works.com/](http://stem-works.com/) |