

MEMORANDUM TO: Ogden College of Science and Engineering Curriculum Committee

Dr. Jack Rudolph	Dr. James Gary	Dr. Terry Leeper
Dr. Martin Stone	Dr. Zhonghang Xia	Dr. John Khouryieh
Dr. Bruce Schulte	Dr. Julie Ellis	Dr. Peter Hamburger
Dr. Scott Grubbs	Dr. Warren Campbell	Dr. Keith Andrew
Dr. Cathleen Webb	Dr. David Keeling	Dr. Attila Por
Dr. Hemali Rathnayake	Dr. Fred Siewers	Dr. Alex Barzilov
Dr. David Erbach		

FROM: Andrew Ernest, Chair

SUBJECT: Agenda for Thursday, November 3, 2011, at 3:45 p.m. in COHH 4123

A. OLD BUSINESS:

- I. Consideration of the minutes of the October 13, 2011, meeting.
- II. **SKYTeach**
 1. Proposal to Revise a Program
 - a. Ref. #734, Middle School Science Education (“MSSE”), 51 hours

B. NEW BUSINESS:

Information Items

1. SMED 300, Middle Grades Science Skills and Methods, 3 hours
2. SMED 400, Applying Middle Grade Science Across Disciplines, 3 hours

Consent Items

1. Proposal to Delete a Course
 - a. CE 244, Engineering Statics, 3 hours
 - b. CE 366, Mechanical and Engineering Systems, 3 hours
 - c. CE 466, Contracts and Specifications, 3 hours
 - d. CS 145, Introduction to Computing, 3 hours
2. Proposal to Revise Course Prerequisites
 - a. MATH 305, Introduction to Mathematical Modeling, 3 hours
 - b. MATH 310, Introduction to Discrete Mathematics, 3 hours
 - c. MATH 315, Theory of Numbers, 3 hours
 - d. MATH 317, Introduction to Algebraic Systems, 3 hours
 - e. MATH 323, Geometry I, 3 hours
 - f. MATH 331, Differential Equations, 3 hours
 - g. MATH 382, Probability and Statistics I, 3 hours
 - h. MATH 398, Seminar, 3 hours
 - i. MATH 405, Numerical Analysis I (CS 405), 3 hours
 - j. MATH 406, Numerical Analysis II, 3 hours
 - k. MATH 415, Algebra and Number Theory, 3 hours
 - l. MATH 417, Algebraic Systems, 3 hours

- m. MATH 423, Geometry II, 3 hours
- n. MATH 431, Intermediate Analysis I, 3 hours
- o. MATH 435, Partial Differential Equations, 3 hours
- p. MATH 439, Topology I, 3 hours
- q. MATH 450, Complex Variables, 3 hours
- r. MATH 470, Introduction to Operations Research, 3 hours
- s. MATH 482, Probability and Statistics II, 3 hours
- t. MATH 498, Senior Seminar, 3 hours

- 3. Proposal to Revise Course Prerequisites/Corequisites
 - a. MATH 183, Introductory Statistics, 3 hours

Action Items

Department of Mathematics and Computer Science

- 1. Proposal to Create a New Course
 - a. MATH 306, Applied and Computational Linear Algebra, 3 hours
- 2. Proposal to Revise a Program
 - a. Ref. #629, Bachelor of Science in Computer Science, 44 hours

Department of Engineering

- 1. Proposal to Revise a Program
 - a. Ref. #534, Civil Engineering, 65 or 66 hours

C. OTHER BUSINESS

MEMBERS PRESENT:

Dr. Cathleen Webb
Dr. Hemali Rathnayake
Dr. David Erbach
Dr. James Gary
Dr. Zhonghang Xia
Dr. Warren Campbell

Dr. John Khouryieh
Dr. David Keeling
Dr. Peter Hamburger
Dr. Keith Andrew
Dr. Attila Por
Dr. Alex Barzilov

Todd Willian for Martin Stone, Albert Meier for Scott Grubbs, Rico Tyler, Huanjing Wang and Rong Yang

FROM: Andrew Ernest, Chair

OLD BUSINESS:

Hamburger/Campbell moved approval of the minutes of the October 13, 2011, meeting. Motion passed.

NEW BUSINESS:

Consent Items

1. Proposal to Revise Course Prerequisites
 - a. EE 380, Microprocessors, 4 hours
2. Proposal to Revise Course Prerequisites/Corequisites
 - a. EE 210, Circuits and Networks I, 3.5 hours
 - b. EE 473, Introduction to Electromagnetic Fields and Waves, 3 hours
3. Proposal to Revise Course Title
 - a. AMS 301, Science of Food Processing 3 hours

The consent agenda was accepted.

Action Items

Department of Agriculture

Hamburger/Keeling moved approval of the proposal to create a new course, HORT 426, Viticulture. Motion passed.

Department of Architectural and Manufacturing Technology

Keeling/Hamburger moved approval of the proposal Create a New Certificate Program, Certificate in Food Processing and Technology. Motion passed.

Keeling/Hamburger moved approval of the proposal to create a new minor program, Minor in Food Processing and Technology. Motion passed with a friendly amendment.

Department of Mathematics and Computer Science

Keeling/Hamburger moved approval of the proposal to create a new course, INFO 336, Database and Information Retrieval. Motion passed.

Keeling/Hamburger moved approval of the proposal to create a new certificate program, CNSS 4011, Information Assurance Certificate. Motion passed.

Keeling/Hamburger moved approval of the proposal to revise course credit hours, MATH 498, Senior Seminar. Motion passed.

SKYTeach

Keeling/Hamburger moved approval of the proposal to revise a program, Ref. #734, Middle School Science Education (“MSSE”). After discussion the motion on the floor was rescinded. Keeling/Hamburger moved to table the proposal until the next scheduled meeting with SMED 300 and SMED 400 being presented as informational items. Motion passed.

OTHER BUSINESS

Two courses were presented as information only items:

BIOL 345, Fire Ecology and Management

BIOL 457, Herpetology

Ogden College of Science and Engineering
SKyTeach
Proposal to Revise A Program
(Action Item)

Contact Person: David Erbach, david.erbach@wku.edu, 745-4455

1. Identification of program:

- 1.1 Current program reference number: 734
- 1.2 Current program title: Middle School Science Education (“MSSE”)
- 1.3 Credit hours: 51

2. Identification of the proposed program changes:

Reduction in the number of hours in the major from 51 to 43
 Inclusion of new courses: SMED 300 and SMED 400
 Removal of several courses from core requirements and restricted electives
 Reduction in the number of “exception hours” requested.

3. Detailed program descriptions:

Current program

Proposed program

<p>General: 1. 30 hours of science core courses are required 2. 15 hours of restricted electives are required, including courses in three disciplines 3. 6 hours of MATH 117 or 118 or 126, and SMED 360 are required 4. All courses must be completed with a grade of C or better. All science courses must be completed with an average of 2.5 or better.</p>	<p>General: 1. 28 hours of science core courses are required, including SMED 300 and 400 2. 9 hours of restricted electives are required including courses in two disciplines 3. 6 hours of MATH 117 or 136, and SMED 360 are required 4. All courses must be completed with a grade of C or better. All science courses must be completed with an average of 2.5 or better.</p>
<p>Core</p> <p>ASTR 104 Astronomy of the Solar System (3) or ASTR 106 Astronomy of Stellar Systems (3)</p> <p>BIOL 120/121 Biological Concepts: Cells, Metabolism, and Genetics (4) BIOL 122/123 Biological Concepts: Evolution, Diversity & Ecology (4)</p>	<p>Core 28 – 30 hours</p> <p>ASTR 104 Astronomy of the Solar System (3)</p> <p>BIOL 120/121 Biological Concepts: Cells, Metabolism, and Genetics (4) BIOL 122/123 Biological Concepts: Evolution, Diversity & Ecology (4)</p>

<p>CHEM 105/106 Fund. of Gen. Chemistry (4) or CHEM 120/121 College Chemistry I (5) GEOL 111/113 The Earth (4) GEOL 112/114 Earth History (4) PHYS 105 Concepts of the Physical World (3) PHYS 201 College Physics I (4) or PHYS 231/232 College Physics and Biophysics I (4)</p>	<p>CHEM 105/106 Fund. of Gen. Chemistry (4) or CHEM 120/121 College Chemistry I (5) GEOL 111/113 The Earth (4) PHYS 105 Concepts of the Physical World (3) or PHYS 201 College Physics I (4) SMED 300 Teaching Science Skills and Methods (3) SMED 400 Applying Science Across Disciplines (3)</p>
<p>Restricted electives: 15 hours including three sciences from among</p> <p>ASTR 405 Astronomy for Teachers (3) BIOL 319/322 Molecular and Cell Biology (4) BIOL 325 Insect Biodiversity (3) BIOL 326 Ornithology (3) BIOL 327 Genetics (4) BIOL 334 Animal Behavior (3) BIOL 348 Plant Taxonomy (3) BIOL 350 Intro Recombinant Genetics (3) BIOL 407 Virology (3) BIOL 411/412 Cell Biology (4) BIOL 430 Evolution: Theory and Process (3)</p> <p>GEOG 427 Water Resources (3) GEOG 471 Natural Resource Mgt. (3) GEOL 308 Structural Geology (3) GEOL 310 General Hydrology (3) GEOL 311 Oceanography (3) GEOL 325 Intro to Minerals and Rocks (3) GEOL 380 Intro Field Techniques (3) GEOL 405 Paleontology (3) PHYS 410 Physics for Teachers (3)</p>	<p>Restricted electives: 9 hours including two sciences from among</p> <p>ASTR 405 Astronomy for Teachers (3) BIOL 319/322 Molecular and Cell Biology (4) BIOL 327 Genetics (4) BIOL 334 Animal Behavior (3) BIOL 348 Plant Taxonomy (3) GEOG 420 Geomorphology (4) GEOG 471 Natural Resource Mgt. (3) GEOL 308 Structural Geology (3) GEOL 325 Intro to Minerals and Rocks (3) GEOL 405 Paleontology (3) PHYS 410 Physics for Teachers (3)</p>
<p>Other requirements: 6 hours</p> <p>MATH 117 Trigonometry (3) or MATH 118 College Alg/Trig (5) or MATH 126 Calc/Anal Geo I (4.5) SMED 360 Research Methods for</p>	<p>Other requirements: 6 hours</p> <p>MATH 117 Trigonometry (3) or MATH 136 Calculus I (4) SMED 360 Research Methods for</p>

4. Rationale for the proposed program change:

Prior to SKyTeach, there was a single major for prospective middle school science teachers, which included both science and education courses. These students needed a broad perspective, which was met through first and second year survey courses in several sciences, courses which were widely available on regional campuses, where about 3/4 of the students were located. The required upper level / lower level credit hour balance was established with upper level education courses. An influencing factor of that approach was WKU's long-standing agreement to make the middle school science degree available on the regional campuses.

Under the UTeach agreement and model, the education and science degrees have been separated. All SKyTeach students are now required to complete double majors. The education courses are no longer part of the science major. The current MSSE major, designed in the early days of SKyTeach, requires a minimum of 51 hours, including at least 15 upper level science hours across three disciplines. These restricted option science courses frequently come with their own prerequisites, which may add additional hours to the program. The courses and their prerequisites are rarely available at regional campuses.

In aggregate, the current program requirements are difficult for students to meet. As a result, enrollment in the Middle School Science program is currently about 10% of what it formerly was. The few students who presently complete the degree are ones who transfer in a significant number of courses. As a practical matter, the degree program no longer exists.

The middle school science program is important because it aspires to prepare better teachers for precisely the age group at which students are known to be most likely to lose interest in the sciences. The proposed changes are an effort to revitalize the preparation of middle school science teachers by making the program more accessible, especially on regional campuses. At the same time, they align the coursework and restricted electives to match more closely the ACT college readiness standards and the new Kentucky State Science Core requirements.

5. Proposed term for implementation and special provisions (if applicable):

Spring semester 2012

6. Dates of prior committee approvals:

SKyTeach Steering Committee:

20 September 2011

Ogden College Curriculum Committee

Professional Education Council (if applicable) _____

General Education Committee (if applicable) _____

Undergraduate Curriculum Committee _____

University Senate _____

**College of Education and Behavioral Sciences
School of Teacher Education
Proposal to Create a New Course
(Action Item)**

Contact Person: Rico Tyler, rico.tyler@wku.edu, (270) 745-4707

1. Identification of proposed course:

- | | | |
|-----|---------------------------------|---|
| 1.1 | Course prefix and number: | SMED 300 |
| 1.2 | Course title: | Middle Grades Science Skills and Methods |
| 1.3 | Abbreviated course title: | Middle Grade Science Skills and Methods |
| 1.4 | Credit hours and contact hours: | 3.0/3.0 |
| 1.5 | Type of course: | C (Lecture/Lab) |
| 1.6 | Prerequisites: | Math 117 and 9 hours of science |
| 1.7 | Course catalog listing: | Laboratory-based introduction to the science skills and methods needed by middle school teachers. |

2. Rationale:

- 2.1 Reason for developing the proposed course:
Middle grades science pre-service teachers in the SKyTeach program do not have a course that teaches, practices, and builds upon fundamental science technical skills including using measurement equipment, recording data, creating and interpreting graphs, designing experiments and controlling variables. State and national standards describe developmentally appropriate science skills that students need to succeed in secondary and post-secondary science courses. Current data suggest that many pre-service and in-service teachers lack enough understanding of many science skills to teach them to middle grade students. Middle grades science pre-service students score a letter grade lower than other pre-service students in SMED 360 Research Methods; over the past six semesters, the average GPA is 3.7 and 2.4, respectively for pre-service secondary students and pre-service middle grades students. The results of a recent NSF funded study of area middle grade science teachers also support this conclusion. Pre-service secondary science teacher candidates master these skills as part of a progression of lower and upper division courses within a single department. In the current Middle School Science Education program middle grade science teaching coursework is spread among four different departments, creating gaps in the breath and depth of science skills content. SMED 300 extends upon the skill sets learned in the introductory courses that would otherwise not be developed.
- 2.2 Projected enrollment in the proposed course:
Based on past enrollments and current trends in the SKyTeach program, we expect 40 students per year to enroll.

- 2.3 Relationship of the proposed course to courses now offered by the department: SMED 360: Research Methods covers several science skills. However, SMED 360 addresses advanced topics in experimental research design. The proposed SMED 300 covers fundamental technical skills that students will later apply in SMED 360. ELED 406: Elementary Science Methods is a pedagogy course and does not cover science skills.
- 2.4 Relationship of the proposed course to courses offered in other departments: The Department of Physics and Astronomy offer ASTR 405: Astronomy for Teachers and PHYS 410: Physics for Teachers. Both of these courses cover specific subject area content. Neither of these courses have a significant content overlap with SMED 300.
- 2.5 Relationship of the proposed course to courses offered in other institutions: EDC 348: Teaching Science in the Middle School taught at the University of Kentucky, EDTP 409: Middle School Science Methods at U of L and MID 372: Laboratory in Teaching Science: Middle School taught at Murray State are all science pedagogy courses and do not teach basic science skills.

3. Discussion of proposed course:

- 3.1 Course objectives: At the conclusion of this course students will be able to:
- Make a variety of direct and indirect measurements using a range of traditional and digital equipment,
 - Design and conduct simple experiments.
 - Collect and properly record data.
 - Create and interpret graphs.
 - Perform basic analysis of data.
 - Design and teach middle grade appropriate lessons incorporating these skills.
- 3.2 Content outline:
- Science skills in state and national standards
 - Use and care of laboratory measuring equipment such as meter sticks, graduated cylinders, stopwatches, triple beam and digital balances, thermometers, multimeters, computer based probes, cameras, video cameras and other equipment
 - Considering accuracy, precision and significant figures when making and using measurements
 - Creating and using graphs by traditional and software-based methods
 - Making indirect measurements
 - Designing experiments and controlling variables
 - Creating lessons that incorporate middle grade science skills
 - Creating lessons that incorporate literacy standards in student writing and presentations

3.3 Student expectations and requirements: Students will be assessed in a variety of ways including:

- Student lab activity reports
- Student experiment proposals
- Quizzes and other formal assessments
- Student presentations
- Instructor observations
- Student designed lesson plans
- Peer and field teaching evaluations

3.4 Tentative texts and course materials
Course packets of selected readings prepared by the instructor

4. Resources:

- 4.1 Library resources: See attached library resource form.
4.2 Computer resources: No new additional resources required

5. Budget implications:

- 5.1 Proposed method of staffing: Current SKyTeach faculty
5.2 Special equipment needed: None
5.3 Expendable materials needed: Initially funded through SKyTeach
5.4 Laboratory materials needed: Initially funded through SKyTeach

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

School of Teacher Education:	<u>10/14/2011</u>
CEBS Curriculum Committee	<u>11/01/2011</u>
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Library Resources Form

**College of Education and Behavioral Sciences
School of Teacher Education
Proposal to Create a New Course
(Action Item)**

Contact Person: Rico Tyler, rico.tyler@wku.edu, (270) 745-4707

1. Identification of proposed course:

- 1.1 Course prefix and number: SMED 400
- 1.2 Course title: Applying Middle Grade Science Across Disciplines
- 1.3 Abbreviated course title: Applying Middle Grade Science Across Disciplines
- 1.4 Credit hours and contact hours: 3.0/3.0
- 1.5 Type of course: C (Lecture/Lab)
- 1.6 Prerequisites: Math 117 and 15 hours of science
- 1.7 Course catalog listing:
Introduction to the knowledge and skills needed to create middle grades science lessons that incorporate content and real world examples from different disciplines.

2. Rationale:

- 2.1 Reason for developing the proposed course:
Middle grade science teacher course work is spread among four different science departments. This makes it difficult for students to acquire a deep understanding of how different science disciplines are related and apply in real world situations. Both of these topics are currently an important part of middle grades science teaching and will become even more important when the Next Generation Science Standards are introduced. A recent NSF funded study of middle grade science teachers in the WKU service area reported that a majority of middle grade science teachers used few, if any real world examples in their teaching. This finding is supported by anecdotal reports from KTIP observations. This course will give students the knowledge and experience they need to teach and assess rigorous, interdisciplinary science lessons that use real world examples of science combined with content from different science disciplines.
- 2.2 Projected enrollment in the proposed course:
Based on past enrollments and current trends in the SKyTeach program, we expect 40 students per year to enroll.
- 2.3 Relationship of the proposed course to courses now offered by the department:
SMED 340: Perspectives in Science and Mathematics provides middle grade science teacher candidates with an understanding of historical perspectives in

science but it does not address real world applications of science that SMED 400 will.

- 2.4 Relationship of the proposed course to courses offered in other departments: PHYS 410: Physics for Teachers and ASTR 405: Astronomy for teachers can include real world applications. Neither course includes any interdisciplinary material nor do the courses specifically cover unit and assessment design.
- 2.5 Relationship of the proposed course to courses offered in other institutions: EDC 348: Teaching Science in the Middle School taught at the University of Kentucky, EDTP 409: Middle School Science Methods at U of L and MID 372: Laboratory in Teaching Science: Middle School taught at Murray State are all science pedagogy courses and do not address applications of science or the connections between different scientific disciplines.

3. Discussion of proposed course:

3.1 Course objectives:

The student will be able to:

- Identify and explain the biology, earth and space science and physical science concepts that apply in a range of real world applications and phenomena
- Select and design laboratory, project based and other experiences that use real world applications and phenomena
- Create and teach lessons that use real world examples to improve student learning
- Design lessons that incorporate literacy skills
- Use real world examples to create higher order assessments

3.2 Content outline:

- Cross cutting and interdisciplinary skills in state and national standards
- Explaining real world and applied science issues using content from different disciplines
- Creating lessons using real world examples and content from different disciplines
- Selecting, adapting and designing laboratory experiences and projects
- Higher order assessment of interdisciplinary lessons

3.3 Student expectations and requirements: Students will be assessed in a variety of ways including:

- Quizzes and other formal assessments
- Student designed lesson plans
- Peer and field teaching evaluations
- Student lab activity reports
- Student presentations
- Student designed lesson plans

- Instructor observations

3.4 Tentative texts and course materials
Course packets of selected readings prepared by the instructor

4. Resources:

- 4.1 Library resources: See attached library resource form
- 4.2 Computer resources: No new additional resources required

5. Budget implications:

- 5.1 Proposed method of staffing: Current SKyTeach faculty
- 5.2 Special equipment needed: None
- 5.3 Expendable materials needed: Initially funded through SKyTeach
- 5.4 Laboratory materials needed: Initially funded through SKyTeach

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

School of Teacher Education:	<u>10/14/2011</u>
CEBS Curriculum Committee	<u>11/01/2011</u>
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Library Resources Form

Proposal Date: 5/5/2011

**Ogden College of Science and Engineering
Department of Engineering
Proposal to Delete a Course
(Consent Item)**

Contact Person: Shane Palmquist, shane.palmquist@wku.edu, 745-2919

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: CE 244
- 1.2 Course title: Engineering Statics
- 1.3 Credit hours: 3

2. Rationale for the course deletion:

This course has not been offered in many years. Civil engineering students take EM 221 (UK Statics) or EM 222 (WKU Statics) instead.

3. Effect of course deletion on programs or other departments, if known: None

4. Proposed term for implementation: Fall 2012

5. Dates of prior committee approvals:

Department of Engineering: 5/11/11

Ogden Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

Proposal Date: 5/5/2011

**Ogden College of Science and Engineering
Department of Engineering
Proposal to Delete a Course
(Consent Item)**

Contact Person: Shane Palmquist, shane.palmquist@wku.edu, 745-2919

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: CE 366
- 1.2 Course title: Mechanical and Electrical Systems
- 1.3 Credit hours: 3

2. Rationale for the course deletion:

This course has not been offered in many years, and there are no plans to offer this course in the future.

3. Effect of course deletion on programs or other departments, if known: None

4. Proposed term for implementation: Fall 2012

5. Dates of prior committee approvals:

Department of Engineering: 5/11/11

Ogden Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

Proposal Date: 5/5/2011

**Ogden College of Science and Engineering
Department of Engineering
Proposal to Delete a Course
(Consent Item)**

Contact Person: Shane Palmquist, shane.palmquist@wku.edu, 745-2919

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: CE 466
- 1.2 Course title: Contracts and Specifications
- 1.3 Credit hours: 3

2. Rationale for the course deletion:

This course has not been offered in many years, and there are no plans to offer this course in the future.

3. Effect of course deletion on programs or other departments, if known: None

4. Proposed term for implementation: Fall 2012

5. Dates of prior committee approvals:

Department of Engineering: _____ 5/11/11 _____

Ogden Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

Proposal Date: 10/03/2011

**Ogden College of Science and Engineering
Department of Mathematics and Computer Science
Proposal to Delete a Course
(Consent Item)**

Contact Person: Zhonghang Xia, zhonghang.xia@wku.edu, 745-6459

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: CS 145
- 1.2 Course title: Introduction to Computing
- 1.3 Credit hours: 3.0

2. Rationale for the course deletion:

CS 145 is considered equivalent to CIS 141, and there is no need for course duplication.

3. Effect of course deletion on programs or other departments, if known:

CIS 141 is accepted by other departments as an equivalent to CS 145.

4. Proposed term for implementation: Fall 2012

5. Dates of prior committee approvals:

Math and CS Department: _____10/20/2011_____

Ogden College Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 305
- 1.2 Course title: Introduction to Mathematical Modeling
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 137

3. Proposed prerequisites: MATH 137 with a grade of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 305, the faculty proposes that the phrase "with a grade of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 310
- 1.2 Course title: INTRODUCTION TO DISCRETE MATHEMATICS
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 137

3. Proposed prerequisites: MATH 137 with a grade of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 310, the faculty proposes that the phrase "with a grade of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 315
- 1.2 Course title: THEORY OF NUMBERS
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 307

3. Proposed prerequisites: MATH 307 with a grade of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 315, the faculty proposes that the phrase "with a grade of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

- 1. Identification of course:**
 - 1.1 Course prefix (subject area) and number: MATH 317
 - 1.2 Course title: INTRODUCTION TO ALGEBRAIC SYSTEMS
 - 1.3 Credit hours: 3

- 2. Current prerequisites:** MATH 307 and MATH 310

- 3. Proposed prerequisites:** MATH 307 and MATH 310 with grades of C or better

- 4. Rationale for the revision of prerequisites:**

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 317, the faculty proposes that the phrase "with grades of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

- 5. Effect on completion of major/minor sequence:** None

- 6. Proposed term for implementation:** Fall 2012

- 7. Dates of prior committee approvals:**

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
 Department of Mathematics
 Proposal to Revise Course Prerequisites
 (Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 323
- 1.2 Course title: GEOMETRY I
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 307

3. Proposed prerequisites: MATH 307 with a grade of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 323, the faculty proposes that the phrase "with a grade of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 331
- 1.2 Course title: DIFFERENTIAL EQUATIONS
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 137

3. Proposed prerequisites: MATH 137 with a grade of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 137, the faculty proposes that the phrase "with a grade of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 382
- 1.2 Course title: PROBABILITY AND STATISTICS I
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 310

3. Proposed prerequisites: MATH 310 with a grade of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 382, the faculty proposes that the phrase "with a grade of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
 Department of Mathematics
 Proposal to Revise Course Prerequisites
 (Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 398
- 1.2 Course title: SEMINAR
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 237

3. Proposed prerequisites: MATH 237 with a grade of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 398, the faculty proposes that the phrase "with a grade of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	September 30, 2011
OCSE Curriculum Committee	
Professional Education Council	
Undergraduate Curriculum Committee	
University Senate	

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 405
- 1.2 Course title: NUMERICAL ANALYSIS I (CS 405)
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 237 or 307 or 310, and CS 180 or CS 230

3. Proposed prerequisites: MATH 237 or 307 or 310, and CS 180 or CS 230 with grades of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 405, the faculty proposes that the phrase "with grades of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 406
- 1.2 Course title: NUMERICAL ANALYSIS II
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 237, 307, 331, and either MATH 405 or CS 405

3. Proposed prerequisites: MATH 237, 307, 331, and either MATH 405 or CS 405 all with grades of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 406, the faculty proposes that the phrase "with grades of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 415
- 1.2 Course title: ALGEBRA AND NUMBER THEORY
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 315 or 317

3. Proposed prerequisites: MATH 315 or 317 with a grade of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 415, the faculty proposes that the phrase "with a grade of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 417
- 1.2 Course title: ALGEBRAIC SYSTEMS
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 317

3. Proposed prerequisites: MATH 317 with a grade of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 417, the faculty proposes that the phrase "with a grade of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 423
- 1.2 Course title: GEOMETRY II
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 323

3. Proposed prerequisites: MATH 323 with a grade of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 423, the faculty proposes that the phrase "with a grade of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 431
- 1.2 Course title: INTERMEDIATE ANALYSIS I
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 337

3. Proposed prerequisites: MATH 337 with a grade of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 431, the faculty proposes that the phrase "with a grade of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 435
- 1.2 Course title: PARTIAL DIFFERENTIAL EQUATIONS
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 237, 307, and 331

3. Proposed prerequisites: MATH 237, 307, and 331 all with grades of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 435, the faculty proposes that the phrase "with grades of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 439
- 1.2 Course title: TOPOLOGY I
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 317 or permission of instructor

3. Proposed prerequisites: MATH 317 with a grade of C or better, or permission of instructor

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 439, the faculty proposes that the phrase "with grades of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 450
- 1.2 Course title: COMPLEX VARIABLES
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 237

3. Proposed prerequisites: MATH 237 with a grade of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 450, the faculty proposes that the phrase "with a grade of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
 Department of Mathematics
 Proposal to Revise Course Prerequisites
 (Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 470
- 1.2 Course title: INTRODUCTION TO OPERATIONS RESEARCH
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 237 and 307

3. Proposed prerequisites: MATH 237 and 307 with grades of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 470, the faculty proposes that the phrase "with grades of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 482
- 1.2 Course title: PROBABILITY AND STATISTICS II
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 237 and 382

3. Proposed prerequisites: MATH 237 and 382 with grades of C or better

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 482, the faculty proposes that the phrase "with grades of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

**Ogden College of Science and Engineering
Department of Mathematics
Proposal to Revise Course Prerequisites
(Consent Item)**

Contact Person: Nezam Iraniparast, email: nezam.iraniparast@wku.edu, phone: 56218

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 498
- 1.2 Course title: SENIOR SEMINAR
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 237 and 317, and senior standing or permission of instructor

3. Proposed prerequisites: MATH 237 and 317 with grades of C or better, and senior standing or permission of instructor

4. Rationale for the revision of prerequisites:

Currently, students majoring in mathematics are required to earn a grade of C or better in each course listed as a prerequisite for another mathematics course. In order to provide a uniform standard for prerequisites and to improve the chances of success for all students enrolling in MATH 498, the faculty proposes that the phrase "with grades of C or better" be added to the current prerequisite. Such a change also will benefit the student who decides to pursue a mathematics major after several semesters of course work.

5. Effect on completion of major/minor sequence: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics Department:	<u>September 30, 2011</u>
OCSE Curriculum Committee	_____
Professional Education Council	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

Proposal Date: 9/21/2011

**Ogden College of Science and Engineering
Department of Mathematics and Computer Science
Proposal to Revise Course Prerequisites/Corequisites
(Consent Item)**

Contact Person: Melanie Autin, melanie.autin@wku.edu, 745-6171

1. Identification of course:

- 1.1 Course prefix (subject area) and number: MATH 183
- 1.2 Course title: Introductory Statistics
- 1.3 Credit hours: 3

2. Current prerequisites:

Eligibility for College Algebra based on Math ACT or MPE scores, or DMA 096C with a grade of C or better

3. Proposed prerequisites:

Satisfactory score on Math ACT and MPE, or COMPASS or KYOTE; or DMA 096C with a grade of C or better

4. Rationale for the revision of prerequisites:

The current prerequisite is placement in College Algebra (MATH 116E or MATH 116). Since MATH 116E will no longer be offered, the new prerequisite will still allow students with adequate mathematical skills to take MATH 183.

The Kentucky Online Testing Program (KYOTE) is an online placement and testing system. COMPASS is a computer-adaptive college placement test. WKU is now honoring scores on these placement tests in addition to the WKU Math Placement Exam (MPE).

5. Effect on completion of major/minor sequence:

There is no effect on completion of major/minor sequence.

6. Proposed term for implementation:

Fall 2012

7. Dates of prior committee approvals:

Department of Mathematics and Computer Science 9/30/2011

OCSE Curriculum Committee _____

Professional Education Council _____

General Education Committee _____

Undergraduate Curriculum Committee

University Senate

Attachment: Course Inventory Form

Proposal Date: 10/04/2011

**Ogden College of Science and Engineering
Department of Mathematics and Computer Science
Proposal to Create a New Course
(Action Item)**

Contact Person: Dr. Mikhail Khenner, mikhail.khenner@wku.edu, 745-2797
Dr. Jonathan Quiton, jonathan.QUITON@wku.edu, 745-2441

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: MATH 306
- 1.2 Course title: Applied and Computational Linear Algebra
- 1.3 Abbreviated course title: Appl Comput Linear Algebra
- 1.4 Credit hours and contact hours: 3.00
- 1.5 Type of course: L
- 1.6 Prerequisites: Math placement eligibility above MATH 116 or MATH 116 with grade of C or better, and MATH 183 or another college level 3-hour statistics course with grade of C or better; or MATH 136 or MATH 142 with grade of C or better.
- 1.7 Course catalog listing: Basic concepts and computational techniques of matrix and linear algebra. Practical methods using computer software for small-to-large data sets. Applications in economics, finance, informatics, statistics, and social, engineering, physical and biological sciences. Computer assignments are required. Not accepted for credit toward a mathematics major or minor.

2. Rationale:

- 2.1 **Reason for developing the proposed course:** MATH 306 is a service course designed to meet the demand from departments at WKU that want their students to be exposed to calculations and computations in the field of linear algebra and to become aware of the range of applications. Skills that students will acquire in MATH 306 will help them succeed in applied, upper-division data analysis courses offered by those departments. MATH 306 is also designed for students enrolled in the proposed informatics program. Computer-aided matrix calculations, manipulations and geometric visualizations will be the central tool in demonstrating linear algebra concepts, and in applying the results in the context of data analysis.
- 2.2 Projected enrollment in the proposed course: Approximately 30 students per year, based on the projected number of students in the proposed informatics program and students from other programs.

- 2.3** Relationship of the proposed course to courses now offered by the department: The department currently offers MATH 307: Introduction to Linear Algebra designed for math and science majors. Its required prerequisites are MATH 136 (Calculus I) and either EE 180 (Digital Circuits) or Phil 215 (Elementary Logic). MATH 307 approaches the study of linear algebra from the formal mathematical/analytic viewpoint, while MATH 306 will use a heuristic approach via hands-on calculations and geometric interpretation.
- 2.4** Relationship of the proposed course to courses offered in other departments: No other course of this nature exists in the University's other departments.
- 2.5** Relationship of the proposed course to courses offered in other institutions: East Tennessee State University offers MATH 2010 Linear Algebra, with topics including those in the proposed course and with the prerequisite course in analytic geometry, quadratic equations, and additional pre-calculus topics. Eastern Michigan University offers MATH 118 Linear Models and Probability, with topics including solutions of systems of linear equations using matrix row-reduction, as well as applications, and with the prerequisite pre-calculus course. Marshall University has MATH 329 Elementary Linear Algebra with the prerequisite of a pre-calculus course or a Math ACT of 27.

3. Discussion of proposed course:

- 3.1** Course objectives: Students will
- Develop understanding of basic concepts in matrix and linear algebra
 - Develop practical skills in analytical solutions of small matrix problems
 - Develop ability to use computer software for the solution of larger matrix problems
 - Develop ability to apply linear algebra skills to problems in various disciplines
- 3.2** Content outline.
- Storage of large data sets in computer memory
 - Basic vector/matrix computations
 - Solution of linear systems using direct (iteration-free) methods
 - Determinants of matrices and their applications
 - Basics of computation of eigen-vectors and eigen-values and the singular value decomposition
 - Software for numerical linear algebra
 - Applications
- 3.3** Student expectations and requirements: Students are expected to attend class, to solve assigned homework problems, and to complete unit exams and a final exam. Computer assignments are required.

3.4 Tentative texts and course materials:

- Linear Algebra with Applications, by W. Keith Nicholson, McGraw Hill (2006), ISBN 978-0070922778;
- Linear Algebra with Applications, Seventh Edition, by Gareth Williams, Jones & Bartlett Publishers (2009), ISBN 978-0763782481;
- Introductory Linear Algebra: An Applied First Course (8th Edition), by Bernard Kolman, David R. Hill, Prentice Hall (2004), ISBN 978-0131437401;
- Linear Algebra with Mathematica: An Introduction Using Mathematica, by Fred Szabo, Academic Press (2009), ISBN 978-0123814012.
- Numerical Linear Algebra for Applications in Statistics, by James Gentle, Springer (2008), ISBN 978-03879 85428

4. Resources:

- 4.1 Library resources: See attached library resources form
4.2 Computer resources: None

5. Budget implications:

- 5.1 Proposed method of staffing: Existing faculty
5.2 Special equipment needed: None
5.3 Expendable materials needed: None
5.4 Laboratory materials needed: None

6. Proposed term for implementation: Fall 2012

7. Dates of prior committee approvals:

Mathematics and Computer Science Department: October 14, 2011
Ogden College Curriculum Committee _____
Undergraduate Curriculum Committee _____
University Senate _____

Attachment: Bibliography, Library Resources Form, Course Inventory Form

Proposal Date: October 3, 2011

**Ogden College of Science and Engineering
Department of Mathematics and Computer Science
Proposal to Revise a Program
(Action Item)**

Contact Person: Zhonghang Xia, zhonghang.xia@wku.edu, 745-6459

1. Identification of program:

- 1.1 Current program reference number: 629
- 1.2 Current program title: Bachelor of Science in Computer Science
- 1.3 Credit hours: 44 minimum hours in Computer Science

2. Identification of the proposed program changes: Establish admission requirements.

3. Detailed program description:

Current Admission Requirements	Proposed Admission Requirements
None	Completion of CS 180, CS 181, and CS 280 with grades of C or better.

4. Rationale for the proposed program change: The proposed course completion requirements will improve the retention rate of computer science majors and ensure that all students entering the program are qualified and capable of studying upper-division computer science courses.

5. Proposed term for implementation and special provisions:

The proposed admission requirement will apply to students admitted to WKU in Fall 2012 and after and to all current students who seek to switch majors to computer science. The requirement will not be retroactive to students who are already declared CS majors.

6. Dates of prior committee approvals:

Math and CS Department	10/20/2011 _____
Ogden Curriculum Committee	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Program Inventory Form

**Ogden College of Science and Engineering
Department of Engineering
Proposal to Revise A Program
(Action Item)**

Contact Person: Shane M. Palmquist, shane.palmquist@wku.edu, 745-2919

1. Identification of program:

- | | | |
|-----|-----------------------------------|-------------------|
| 1.1 | Current program reference number: | 534 |
| 1.2 | Current program title: | Civil Engineering |
| 1.3 | Credit hours: | 65 or 66 |

2. Identification of the proposed program changes:

Nine (9) credit hours of technical electives are required from the approved list. See section 3 for the current and the proposed list of technical electives.

- Remove CE 366 Mechanical & Electrical Systems (3 credit hours) from the list of approved technical electives.
- Remove CE 416 Construction Administration (3 credit hours) from the list of approved technical electives.
- Remove CE 466 Contracts & Specifications (3 credit hours) from the list of approved technical electives.
- Add CE 326 Engineering Law (3 credit hours) to the list of approved technical electives.
- Add CE 436 Design/Construction Integration (3 credit hours) to the list of approved technical electives.
- Add CE 441 Masonry Construction Lab (1 credit hour) to the list of approved technical electives.
- Add CE 444 Bridge Engineering (3 credit hours) to the list of approved technical electives.
- Add CE 451 Water & Wastewater Treatment (3 credit hours) to the list of approved technical electives.
- Add CE 462 Hydraulic Engineering Systems (3 credit hours) to the list of approved technical electives.

- Add CE 486 Steel & Concrete Construction (3 credit hours) from the list of approved technical electives.
- Add CM 363 Construction Estimating & Bidding (3 credit hours) to the list of approved technical electives.
- Add CM 400 Construction Administration (3 credit hours) to the list of approved technical electives.
- Add EE 350 Fundamentals of Electrical Engineering (4 credit hours) to the list of approved technical electives.
- Add GEOG 317 Geographic Information Systems (3 credit hours) to the list of approved technical electives.
- Add GEOG 318 GIS for Engineers (3 credit hours) to the list of approved technical electives.

3. Detailed program description:

Nine (9) hours of technical electives are required.

Current Program Technical Electives	Hrs	Proposed Program Technical Electives	Hrs
CE 300 Floodplain Management	3	CE 300 Floodplain Management	3
		CE 326 Engineering Law	3
CE 360 Estimating Scheduling Bidding	3	CE 360 Estimating Scheduling Bidding	3
CE 361 Estimating Lab	1	CE 361 Estimating Lab	1
CE 366 Mechanical & Electrical Systems	3		
CE 378 Route Surveying	3	CE 378 Route Surveying	3
CE 379 Route Surveying Lab	1	CE 379 Route Surveying Lab	1
CE 380 Boundary Surveying	3	CE 380 Boundary Surveying	3
CE 381 Boundary Surveying Lab	1	CE 381 Boundary Surveying Lab	1
CE 383 Structural Steel Design	3	CE 383 Structural Steel Design	3
CE 416 Construction Administration	3		
CE 426 Advanced Construction Materials	3	CE 426 Advanced Construction Materials	3
		CE 436 Design/Construction Integration	3
CE 440 Masonry Design and Construction	3	CE 440 Masonry Design and Construction	3
		CE 441 Masonry Construction Lab	1
		CE 444 Bridge Engineering	3
		CE 451 Water & Wastewater Treatment	3
		CE 462 Hydraulic Engineering Systems	3
CE 466 Contracts & Specifications	3		
CE 474 Civil Engineering Project	1-3	CE 474 Civil Engineering Project	1-3

Current Program Technical Electives	Hrs	Proposed Program Technical Electives	Hrs
CE 475 Selected Topics in Civil Eng.	3	CE 475 Selected Topics in Civil Eng.	3
CE 476 Highway Construction	3	CE 476 Highway Construction	3
		CE 486 Steel & Concrete Construction	3
CE 490 UK-CE Selected Topics (Spring)	3	CE 490 UK-CE Selected Topics (Spring)	3
CE 491 UK-CE Selected Topics (Fall)	3	CE 491 UK-CE Selected Topics (Fall)	3
EM 313 Dynamics	3	EM 313 Dynamics	3
		CM 363 Construction Est. & Bidding	3
		CM 400 Construction Administration	3
CM 426 Construction Law	3	CM 426 Construction Law	3
		EE 350 Fundamentals of Electrical Eng.	4
		GEOG 317 Geographic Info. Systems	3
		GEOG 318 GIS for Engineers	3

4. Rationale for the proposed program change:

- CE 366 Mechanical & Electrical Systems (3 credit hours) is being deleted from the curriculum with this round of curriculum changes.
- CE 416 Construction Administration (3 credit hours) was deleted from the curriculum two years ago.
- CE 466 Contracts and Specifications (3 credit hours) is being deleted from the curriculum with this round of curriculum changes.
- CE 326 Engineering Law (3 credit hours) is an existing engineering course that would be an appropriate technical elective for students in the program.
- CE 436 Design/Construction Integration (3 credit hours) is an existing engineering course that would be an appropriate technical elective for students in the program.
- CE 441 Masonry Construction Lab (1 credit hour) is the lab component for CE 440 Masonry Design and Construction (3 credit hours). The lab should count toward the technical electives credit hour requirement since Boundary Surveying Lab (1 credit hour) and Route Surveying Lab (1 credit hour) count toward this requirement.
- CE 444 Bridge Engineering (3 credit hours) is a new engineering course that would be an appropriate technical elective for students in the program.
- CE 451 Water & Wastewater Treatment (3 credit hours) is an existing engineering course that would be an appropriate technical elective for students in the program.

- CE 462 Hydraulic Engineering Systems (3 credit hours) is an existing engineering course that would be an appropriate technical elective for students in the program.
- CE 486 Steel & Concrete Construction (3 credit hours) is an existing engineering course that would be an appropriate technical elective for students in the program.
- CM 363 Construction Estimating & Bidding (3 credit hours) is an existing civil engineering related course that would be an appropriate technical elective for students in the program.
- CM 400 Construction Administration (3 credit hours) is an existing civil engineering related course that would be an appropriate technical elective for students in the program.
- EE 350 Fundamentals of Electrical Engineering (4 credit hours) is an existing engineering related course that would be an appropriate technical elective for students in the program.
- GEOG 317 Geographic Information Systems (3 credit hours) is an existing civil engineering related course that would be an appropriate technical elective for students in the program.
- GEOG 318 GIS for Engineers (3 credit hours) is an existing civil engineering related course that would be an appropriate technical elective for students in the program.

5. **Proposed term for implementation:** Fall 2012

6. **Dates of prior committee approvals:**

Department of Engineering 10/18/2011

Ogden College Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Program Inventory Form