

Ogden College of Science and Engineering  
Western Kentucky University  
Office of the Dean  
745-6371

**REPORT TO THE GRADUATE COUNCIL COMMITTEE**

DATE: March 9, 2016

FROM: Ogden College of Science and Engineering

Ogden College of Science and Engineering Committee Members: Dr. Fred DeGraves, Dr. John Khouryieh, Dr. Michael Smith, Dr. Eric Conte, Dr. Zhonghang Xia, Dr. Shane Palmquist, Dr. David Keeling, Dr. Ferhan Atici, Dr. Sanju Gupta, Dr. Sharon Mutter

Chair: Dr. Cathleen Webb

The Ogden College of Science and Engineering submits the following items for consideration at the September meeting:

Action	<b>Proposal to Create a New Course</b> CS 555, Data Science Contact Person: Zhonghang Xia, <a href="mailto:zhonghang.xia@wku.edu">zhonghang.xia@wku.edu</a> , 5-6459
Action	<b>Proposal to Revise a Program</b> AMS 0447, Engineering Technology Management Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 510, Emerging Technologies Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 520, Resource Management Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 530, Automated Data Collection Systems Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 535, Workforce Development Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 540, Theory of Constraints Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 571, Research Methods in Technology Management Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 580, Six Sigma Quality Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951

Action	<b>Proposal to Revise a Course</b> AMS 588, Product Development Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 590, Operations Leadership Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 594, Lean Systems Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 630, Legal and Ethical Issues in Technology Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 650, Supply Chain Management Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 655, Project Management Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Course</b> AMS 671, Quality Management Contact Person: Mark Doggett, <a href="mailto:mark.doggett@wku.edu">mark.doggett@wku.edu</a> , 5-6951
Action	<b>Proposal to Revise a Program</b> MATH 085, Master of Science: in Mathematics Contact Person: Ferhan Atici, <a href="mailto:ferhan.atici@wku.edu">ferhan.atici@wku.edu</a> , 5-6229
Action	<b>Proposal to Revise a Course</b> MATH 403G, Geometry for Elementary and Middle School Teachers Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 405G, Numerical Analysis I Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 406G, Numerical Analysis Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 411G, Problem solving for Elementary and Middle School Teachers Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 413G, Algebra and Technology for Middle Grades Teachers Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 415G, Algebra and Number Theory Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 417G, Algebraic Systems Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048

Action	<b>Proposal to Revise a Course</b> MATH 421G, Problem Solving for Secondary Teachers Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 423G, Geometry II Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 429G, Probability/Statistics II Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 431G, Intermediate Analysis I Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 435G, Partial Differential Equations Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 439G, Topology I Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 450G, Complex Variables Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 470G – Introduction to Operations Research Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 482G, Probability & Statistics II Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 502, Introduction to Probability and Statistics II Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 508, Number Concepts for Elementary and Middle Grades Teachers Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 517, Topics from Algebra Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 529, Applied Probability Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 531, Advanced Differential Equations Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048
Action	<b>Proposal to Revise a Course</b> MATH 532, Real Analysis Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a> , 5-7048

Action	<p><b>Proposal to Revise a Course</b>  MATH 535, Advanced Applied Mathematics  Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a>, 5-7048</p>
Action	<p><b>Proposal to Revise a Course</b>  MATH 539, Topology II  Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a>, 5-7048</p>
Action	<p><b>Proposal to Revise a Course</b>  MATH 540, Stochastic Processes  Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a>, 5-7048</p>
Action	<p><b>Proposal to Revise a Course</b>  MATH 542, Advanced Topics in Discrete Mathematics  Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a>, 5-7048</p>
Action	<p><b>Proposal to Revise a Course</b>  MATH 550, Complex Analysis  Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a>, 5-7048</p>
Action	<p><b>Proposal to Revise a Course</b>  MATH 570, Topics in Operations Research  Contact Person: Natasha Gerstenschlager, <a href="mailto:natasha.gerstenschlager@wku.edu">natasha.gerstenschlager@wku.edu</a>, 5-7048</p>

**MINUTES – OCSE Graduate Curriculum Committee**

**February 10<sup>th</sup>, 2016**

**Members Present:** Dr. Fred DeGraves, Dr. John Khouryieh, Dr. Michael Smith,  
Dr. Zhonghang Xia, Dr. Shane Palmquist, Dr. David Keeling, Dr. Ferhan Atici, Dr. Sanju Gupta,  
Dr. Sharon Mutter,

Dr. Cathleen Webb, Chair

**Old Business**

The minutes from December and January were approved.

**New Business**

No Consent Items

**Action Items**

Keeling/Atici made a motion to bundle and approve all action items. Motion approved.

BIOL 561

MATH 501

MATH 503

MATH 504

MATH 510

MATH 511

MATH 512

MATH 514

**Create a New Course  
(Action)**

Date: 2/19/2016

College: Ogden College of Science & Engineering

Department: Computer Science

Contact Person: Zhonghang Xia, [Zhonghang.xia@wku.edu](mailto:Zhonghang.xia@wku.edu), 5-6459

**1. Proposed course:**

- 1.1 Course prefix (subject area) and number: CS 555
- 1.2 Course title: Data Science
- 1.3 Abbreviated course title: Data Science  
(maximum of 30 characters or spaces)
- 1.4 Credit hours: 3
- 1.5 Variable credit : No
- 1.6 Repeatable: No
- 1.7 Grade type: Standard Letter Grade
- 1.8 Prerequisites: Graduate Status
- 1.9 Corequisites: None
- 1.10 Course description: Introduction to concepts and methods in the emerging field of data science. Introduces algorithms and tools to support problem-focused data-analytic thinking.
- 1.11 Course equivalency: None

**2. Rationale:**

- 2.1 Reason for developing the proposed course:  
Our networked world is generating the flood of big data that no human, or group of humans, can process fast enough. This data flood has the potential to transform the way business, government, science, and healthcare are carried out. There is significant and growing demand for data-experienced professionals in these areas. But too few possess the skills needed to use automated analytical tools and cut through the noise to create knowledge from big data.  
This course will serve as a fundamental course in the interdisciplinary and emerging field of data science. Students will learn to combine tools and techniques from statistics, computer science, and data visualization to solve problems using data.
- 2.2 Relationship of the proposed course to other course at WKU:  
Some similar content is covered in CS 565 which focuses on modelling and algorithms. However, this new course focuses on data collection, cleaning, reduction, and preparation for analysis.
- 2.3 Relationship of the proposed course offered in other departments:  
There is currently no similar programming-based course offered by in other departments
- 2.4 Relationship of the proposed course offered in other institutions:  
A number of institutions offer undergraduate and graduate courses with similar topics.

University of North Kentucky offers Bachelor of Science in data science. They offer similar topics at different levels in DSC 194, DSC 199, DSC 311, and DSC 421. New York University offers a master program in data science. The program focuses on the development of new methods for data science. They cover similar topics in course DS-GA-1001.

### 3. Discussion of proposed course:

3.1 Schedule type: C

3.2 Learning Outcomes:

- Understand fundamental principles of using data to get information about an unknown quantity of interest
- Work with existing software tools to analyze structured, unstructured big data
- Apply computational techniques to real-world problems involving large and complex data sets
- Visualize, present and communicate analytical results

3.3 Content outline:

- Understanding data and data science
  - What is data science—state of art of data science
  - Data product and application
- Learning from data
  - Methods and techniques for data science
  - statistics basics
  - Case studies
- Data manipulation
  - Accessing, subsetting and reshaping
  - Sorting, rearranging, merging, grouping, etc.
  - Case studies
- Data representation
  - Variety of data types: unstructured and structured data
  - Data visualization
- Data analysis and interpretation
  - Methods of describing data
  - Data analytics and modeling
  - Case studies
- Big data
  - Big data technology
  - Manipulation of data using Hadoop and Mapreduce

3.4 Student expectations and requirements: Basic probability and statistics

3.5 Tentative texts and course materials: Doing Data Science: Strait Talk from the Frontline, O'Reilly Media; 1 edition (November 3, 2013), ISBN-10: 1449358659

**4. Budget implications:**

4.1 Proposed method of staffing: Current staffing is sufficient

4.2 Special equipment, materials, or library resources needed: None beyond what is already available

**5. Term for implementation:** Spring 2017

**6. Dates of committee approvals:**

Computer Science

02/23/2016

College Graduate Curriculum Committee

Graduate Council

University Senate

*\*\*New course proposals require a Course Inventory Form be submitted by the College Dean's office to the Office of the Registrar.*



**Revise a Program  
(Action)**

Date: February 9, 2016

College: Ogden

Department: AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of program:**

1.1 Reference number: 0447

1.2 Program title: Engineering Technology Management

**2. Proposed change(s):**

2.1  title:

2.2  admission criteria:

2.3  curriculum:

2.4  other:

**3. Detailed program description:**

Existing Program			Revised Program		
<b>Management Core: 12 hrs/ 4 courses</b>			<b>Management Core: 12 hrs/ 4 courses</b>		
Resource Management	AMS 520	3	Resource Management	AMS 520	3
Operations Leadership	AMS 590	3	Operations Leadership	AMS 590	3
Project Management	AMS 655	3	Project Management	AMS 655	3
Quality Management	AMS 671	3	Quality Management	AMS 671	3
<b>Technical Concentration: 9 hrs/ 3 courses</b>			<b>Electives: 12 hrs/ 4 courses</b>		
Emerging Technologies	AMS 510		Emerging Technologies	AMS 510	
Theory of Constraints	AMS 540		Theory of Constraints	AMS 540	
Lean Systems	AMS 594		Lean Systems	AMS 594	
Six Sigma Quality	AMS 580		Six Sigma Quality	AMS 580	
Product Development	AMS 588		Product Development	AMS 588	
Supply Chain Management	AMS 650	9	Supply Chain Management	AMS 650	
<b>Electives: 3 hrs/ 1 course</b>			Automated Data Collection	AMS 530	
Automated Data Collection	AMS 530		Workforce Development	AMS 535	
Workforce Development	AMS 535		Legal & Ethics Issues in Tech	AMS 630	12
Legal & Ethics Issues in Tech	AMS 630	3	<b>Research: 9 hrs/ 2 courses</b>		
<b>Research: 9 hrs/ 2 courses</b>			Research Methods Tech Mgmt.	AMS 571	3
Research Methods Tech Mgmt.	AMS 571	3	Thesis	AMS 599	6
Thesis	AMS 599	6	<b>Grand Total Hours: 33</b>		
<b>Grand Total Hours: 33</b>					

- 4. **Rationale:** Program growth plus limited faculty capacity has resulted in the need for more program flexibility. This proposal provides both course scheduling and student flexibility for program completion. It allows the offering of more electives across the entire academic year while simultaneously giving students more choices in tailoring their program of study.
- 5. **Proposed term for implementation:** Fall 2016
- 6. **Dates of committee approvals:**

AMS	<u>2/19/2016</u>
College Graduate Curriculum Committee	_____
Graduate Council	_____
University Senate	_____

**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 510
- 1.2 Course title: Emerging Technologies

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

2/19/2016

College Graduate Curriculum Committee

Graduate Council

University Senate

*\*Course revision proposals require a Course Inventory Form be submitted by the College Dean's office to the Office of the Registrar.*

**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

1.1 Course prefix (subject area) and number: AMS 520

1.2 Course title: Resource Management

**2. Proposed change(s):**

2.1 course number:

2.2 course title:

2.3 credit hours:

2.4 grade type:

2.5 prerequisites: AMS major

2.6 corequisites:

2.7 course description:

2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

2/19/2016

College Graduate Curriculum Committee

Graduate Council

University Senate

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**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 530
- 1.2 Course title: Automated Data Collection Systems

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

2/19/2016

College Graduate Curriculum Committee

Graduate Council

University Senate

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**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 535
- 1.2 Course title: Workforce Development

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

College Graduate Curriculum Committee

Graduate Council

University Senate

2/19/2016

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**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 540
- 1.2 Course title: Theory of Constraints

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

\_\_\_\_\_ 2/19/2016 \_\_\_\_\_

College Graduate Curriculum Committee

Graduate Council

University Senate

*\*Course revision proposals require a Course Inventory Form be submitted by the College Dean's office to the Office of the Registrar.*

**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 571
- 1.2 Course title: Research Methods in Technology Management

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

2/19/2016

College Graduate Curriculum Committee

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University Senate

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**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 580
- 1.2 Course title: Six Sigma Quality

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major and AMS 271
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

- 3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

The instructor previously evaluated each student for completion of an undergraduate statistics course and statistical process control course. While many graduate level students have completed some basic statistics, most have not taken statistical process control, which is fundamental for success in this course. AMS 271 satisfies both of these prerequisites and is a required course for undergraduates in AMS programs.

- 4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

College Graduate Curriculum Committee

Graduate Council

University Senate

2/19/2016

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**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 588
- 1.2 Course title: Product Development

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

\_\_\_\_\_ 2/19/2016

College Graduate Curriculum Committee

Graduate Council

University Senate

*\*Course revision proposals require a Course Inventory Form be submitted by the College Dean's office to the Office of the Registrar.*

**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 590
- 1.2 Course title: Operations Leadership

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

College Graduate Curriculum Committee

Graduate Council

University Senate

2/19/2016

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*\*Course revision proposals require a Course Inventory Form be submitted by the College Dean's office to the Office of the Registrar.*

**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 594
- 1.2 Course title: Lean Systems

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

2/19/2016

College Graduate Curriculum Committee

Graduate Council

University Senate

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**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 630
- 1.2 Course title: Legal and Ethical Issues in Technology

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

2/19/2016

College Graduate Curriculum Committee

Graduate Council

University Senate

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**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 650
- 1.2 Course title: Supply Chain Management

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

2/19/2016

College Graduate Curriculum Committee

Graduate Council

University Senate

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**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 655
- 1.2 Course title: Project Management

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

2/19/2016

College Graduate Curriculum Committee

Graduate Council

University Senate

*\*Course revision proposals require a Course Inventory Form be submitted by the College Dean's office to the Office of the Registrar.*

**Revise a Course  
(Action)**

Date: February 9, 2016

College, Department: Ogden, AMS

Contact Person: Mark Doggett, mark.doggett@wku.edu, 270-745-6951

**1. Identification of course**

- 1.1 Course prefix (subject area) and number: AMS 671
- 1.2 Course title: Quality Management

**2. Proposed change(s):**

- 2.1 course number:
- 2.2 course title:
- 2.3 credit hours:
- 2.4 grade type:
- 2.5 prerequisites: AMS major
- 2.6 corequisites:
- 2.7 course description:
- 2.8 other:

**3. Rationale for revision of course:** Current faculty capacity is not able to support the course demand from other majors and non-degree seeking students (17 FTE). Course enrollment will be restricted to allow majors to register for the course first. Any remaining course slots will be granted on an exception basis one week prior to the start of classes.

**4. Term of implementation:** Fall 2016

**5. Dates of committee approvals:**

AMS

2/19/2016

College Graduate Curriculum Committee

Graduate Council

University Senate

*\*Course revision proposals require a Course Inventory Form be submitted by the College Dean's office to the Office of the Registrar.*



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

Contact Person: Ferhan Atici, ferhan.atici@wku.edu, 5-6229

**1. Identification of program:**

- 1.1 Current program reference number: 085
- 1.2 Current program title: Master of Science: in Mathematics
- 1.3 Credit hours:30

**2. Identification of the proposed program changes:**

Mathematical Economics option in the Master of Science program in Mathematics.

**3. Detailed program description:**

<b>Current Program</b>	<b>Proposed Program</b>
<p>The M.S. has two options available. The M.S. (general option) provides knowledge in such traditional areas as analysis, algebra, topology, and applied mathematics, and is recommended for students who wish to obtain a Ph. D. degree, to teach in a community college, or to seek employment in industry with an emphasis on conceptual foundations. The M.S. (computational option) is designed for students seeking employment in industry with an emphasis on computational mathematics and/or computer science in addition to knowledge in traditional areas.</p> <p>General Option:</p> <p>Admission Requirements Admission requirements for the M.S. in Mathematics General Option include:</p> <p>1. One of the following: (a) A minimum GAP score of 600 [GAP = (GRE-V + GRE-Q) + (Undergraduate GPA x 100)] or a minimum GAP score of 3000 for students who took the GRE prior to August 2011 [GAP = (GRE-V + GRE-Q) x Undergraduate GPA] *Students who took the GRE prior to 2002 should contact the graduate advisor of the program; (b) A GRE score of at least 300. For options (a) or (b) WKU requires a minimum score of 139 on both the verbal and quantitative parts of the GRE; (c) For students that graduate from WKU with a mathematics major, a GPA of at least 3.3 in their</p>	<p>The M.S. has three options available. The M.S. (general option) provides knowledge in such traditional areas as analysis, algebra, topology, and applied mathematics, and is recommended for students who wish to obtain a Ph. D. degree, to teach in a community college, or to seek employment in industry with an emphasis on conceptual foundations. The M.S. (computational option) is designed for students seeking employment in industry with an emphasis on computational mathematics and/or computer science in addition to knowledge in traditional areas. The M.S. (Mathematical Economics option) is designed for students seeking employment in industry with an emphasis on economics in addition to knowledge in traditional areas. It is also designed for students who completed a joint undergraduate degree program in mathematical economics at WKU.</p> <p>General Option:</p> <p>Admission Requirements Admission requirements for the M.S. in Mathematics General Option include:</p> <p>1. One of the following: (a) A minimum GAP score of 600 [GAP = (GRE-V + GRE-Q) + (Undergraduate GPA x 100)] or</p>

mathematics major, a GPA of at least 3.3 in their mathematics major.

2. Successful completion of the following undergraduate courses:

- (a) a one year calculus sequence;
- (b) linear algebra;
- (c) discrete mathematics;
- (d) an applied mathematics course (e.g. differential equations, probability, calculus-based statistics, numerical analysis);
- (e) abstract algebra.

3. A cumulative grade point average of 3.0 (on a 4.0 scale) is required in at least one of the following:

- (a) A cumulative grade point average of 3.0 (on a 4.0 scale) in at least one of the following:
  - (a) all mathematics courses that are applicable to the undergraduate mathematics major;
  - (b) courses specified in (b) through (e) of Item 2 above.

Degree Requirements minimum of 30 hours

The Master of Science in Mathematics (General Option) requires a minimum of 30 hours of graduate-level mathematics courses. A maximum of 12 hours at the 400G level may be included in the entire program. A research tool is required and may entail coursework beyond the 30 hours of mathematics. The research tool must be completed during the first 15 hours of coursework and may be fulfilled by a mathematics reading course, a computer science course, a foreign language examination, or another option approved by a Mathematics Department graduate advisor.

A student may, upon prior approval of the Mathematics Department Graduate Committee, include in his/her program a maximum of 6 hours of coursework from a related field.

Comprehensive exams are required only for students who choose not to write a thesis.

#### Basic Requirements

1. The following courses must be completed:

- a) MATH 431G Intermediate Analysis I
- b) MATH 417G Algebraic Systems, or MATH 439G Topology, or MATH 450G Complex

a minimum GAP score of 3000 for students who took the GRE prior to August 2011 [GAP = (GRE-V + GRE-Q) x Undergraduate GPA] \*Students who took the GRE prior to 2002 should contact the graduate advisor of the program;

- (b) A GRE score of at least 300. For options (a) or (b) WKU requires a minimum score of 139 on both the verbal and quantitative parts of the GRE;
- (c) For students that graduate from WKU with a mathematics major, a GPA of at least 3.3 in their mathematics major.

2. Successful completion of the following undergraduate courses:

- (a) a one year calculus sequence;
- (b) linear algebra;
- (c) discrete mathematics;
- (d) an applied mathematics course (e.g. differential equations, probability, calculus-based statistics, numerical analysis);
- (e) abstract algebra.

3. A cumulative grade point average of 3.0 (on a 4.0 scale) is required in at least one of the following:

- (a) A cumulative grade point average of 3.0 (on a 4.0 scale) in at least one of the following:
  - (a) all mathematics courses that are applicable to the undergraduate mathematics major;
  - (b) courses specified in (b) through (e) of Item 2 above.

Degree Requirements minimum of 30 hours

The Master of Science in Mathematics (General Option) requires a minimum of 30 hours of graduate-level mathematics courses. A maximum of 12 hours at the 400G level may be included in the entire program. A research tool is required and may entail coursework beyond the 30 hours of mathematics. The research tool must be completed during the first 15 hours of coursework and may be fulfilled by a mathematics reading course, a computer science course, a foreign language examination, or another option approved by a Mathematics Department graduate advisor.

A student may, upon prior approval of the Mathematics Department Graduate Committee, include in his/her program a maximum of 6 hours of coursework from a related field.

Comprehensive exams are required only for students who choose not to write a thesis.

#### Basic Requirements

Variables, or MATH 435G Partial Differential Equations

- c) MATH532 Real Analysis, or MATH 550 Complex Analysis, or MATH 535 Advanced Applied Mathematics-I, or MATH 541 Graph Theory

*\*If equivalent courses were taken at the undergraduate level, then the student must substitute appropriate graduate mathematics courses selected in consultation with a Mathematics Department graduate advisor.*

#### *Electives*

*The remaining mathematics courses in the student program must be chosen from:*

MATH 405G Numerical Analysis I  
MATH 406G Numerical Analysis II  
MATH 415G Algebra and Number Theory  
MATH 417G Algebraic Systems  
MATH 439G Topology  
MATH 423G Geometry II  
MATH 435G Partial Differential Equations  
MATH 450G Complex Variables  
MATH 470G Introduction to Operations Research  
MATH 500 Readings in Mathematics  
MATH 517 Topics from Algebra  
MATH 529 Applied Probability  
MATH 531 Advanced Differential Equations  
MATH 532 Real Analysis  
MATH 535 Advanced Applied Mathematics I  
MATH 536 Advanced. Applied Mathematics II  
MATH 539 Topology II  
MATH 540 Stochastic Processes  
MATH 541 Graph Theory  
MATH 542 Advanced Topics in Discrete Mathematics  
MATH 550 Complex Analysis  
MATH 560 Functional Analysis  
MATH 570 Topics in Operations Research  
MATH 590 Special Topics in Mathematics  
MATH 598 Graduate Seminar  
STAT 549 Statistical Methods I  
STAT 550 Statistical Methods II

#### Research Tool

A research tool is required and may entail coursework beyond the 30 hours of mathematics. The research tool can be fulfilled in a variety of ways, some of which are listed below:

·Taking the MATH 598 Graduate Seminar

1. The following courses must be completed:

- a) MATH 431G Intermediate Analysis I  
b) MATH 417G Algebraic Systems, or MATH 439G Topology, or MATH 450G Complex Variables, or MATH 435G Partial Differential Equations  
c) MATH532 Real Analysis, or MATH 550 Complex Analysis, or MATH 535 Advanced Applied Mathematics-I, or MATH 541 Graph Theory

*\*If equivalent courses were taken at the undergraduate level, then the student must substitute appropriate graduate mathematics courses selected in consultation with a Mathematics Department graduate advisor.*

#### Electives

The remaining mathematics courses in the student program must be chosen from:

MATH 405G Numerical Analysis I  
MATH 406G Numerical Analysis II  
MATH 415G Algebra and Number Theory  
MATH 417G Algebraic Systems  
MATH 439G Topology  
MATH 423G Geometry II  
MATH 435G Partial Differential Equations  
MATH 450G Complex Variables  
MATH 470G Introduction to Operations Research  
MATH 500 Readings in Mathematics  
MATH 517 Topics from Algebra  
MATH 529 Applied Probability  
MATH 531 Advanced Differential Equations  
MATH 532 Real Analysis  
MATH 535 Advanced Applied Mathematics I  
MATH 536 Advanced. Applied Mathematics II  
MATH 539 Topology II  
MATH 540 Stochastic Processes  
MATH 541 Graph Theory  
MATH 542 Advanced Topics in Discrete Mathematics  
MATH 550 Complex Analysis  
MATH 560 Functional Analysis  
MATH 570 Topics in Operations Research  
MATH 590 Special Topics in Mathematics  
MATH 598 Graduate Seminar  
STAT 549 Statistical Methods I  
STAT 550 Statistical Methods II

· Graduate level courses in other disciplines. The research tool course should be in disciplines that have a strong relation to mathematics. For example, any graduate level course pre-approved by the student's graduate advisor will be accepted.

The research tool cannot be taken during the last semester.

#### Optional Thesis 6 hours

Students who choose to write a thesis are required to complete 6 hours of MATH 599 Thesis Research and Writing and to give an oral defense of the thesis.

#### Computational Mathematics Option

##### Admission Requirements

1. One of the following:

(a) A minimum GAP score of 600 [ $GAP = (GRE-V + GRE-Q) + (Undergraduate\ GPA \times 100)$ ] or a minimum GAP score of 3000 for students who took the GRE prior to August 2011 [ $GAP = (GRE-V + GRE-Q) \times Undergraduate\ GPA$ ]

\*Students who took the GRE prior to 2002 should contact the graduate advisor of the program;

(b) A GRE score of at least 300. For options (a) or (b) WKU requires a minimum score of 139 on both the verbal and quantitative parts of the GRE;

(c) For students that graduate from WKU with a mathematics major, a GPA of at least 3.3 in their mathematics major.

2. Completion of the following undergraduate courses:

(a) a one year calculus sequence;

(b) linear algebra;

(c) discrete mathematics;

(d) a one year sequence of programming courses;

(e) a B.A. degree with a major in either Computer Science, Engineering, Mathematics or Physics.

3. A cumulative grade point average of at least 3.0 (on a 4.0 scale) in at least one of the following:

(a) all mathematics and computer science courses that are listed in (a) through (d) of Item 2 above;

or

(b) all courses in the major listed in (e) of Item 2 above. *Students cannot enter the program if they have a deficiency in the courses listed in Item 2 above*

#### Research Tool

A research tool is required and may entail coursework beyond the 30 hours of mathematics. The research tool can be fulfilled in a variety of ways, some of which are listed below:

·Taking the MATH 598 Graduate Seminar

·Graduate level courses in other disciplines. The research tool course should be in disciplines that have a strong relation to mathematics. For example, any graduate level course pre-approved by the student's graduate advisor will be accepted.

The research tool cannot be taken during the last semester.

#### Optional Thesis 6 hours

Students who choose to write a thesis are required to complete 6 hours of MATH 599 Thesis Research and Writing and to give an oral defense of the thesis.

#### Computational Mathematics Option

##### Admission Requirements

1. One of the following:

(a) A minimum GAP score of 600 [ $GAP = (GRE-V + GRE-Q) + (Undergraduate\ GPA \times 100)$ ] or a minimum GAP score of 3000 for students who took the GRE prior to August 2011 [ $GAP = (GRE-V + GRE-Q) \times Undergraduate\ GPA$ ]

\*Students who took the GRE prior to 2002 should contact the graduate advisor of the program;

(b) A GRE score of at least 300. For options (a) or (b) WKU requires a minimum score of 139 on both the verbal and quantitative parts of the GRE;

(c) For students that graduate from WKU with a mathematics major, a GPA of at least 3.3 in their mathematics major.

2. Completion of the following undergraduate courses:

(a) a one year calculus sequence;

(b) linear algebra;

(c) discrete mathematics;

(d) a one year sequence of programming courses;

(e) a B.A. degree with a major in either Computer Science, Engineering, Mathematics or Physics.

3. A cumulative grade point average of at least 3.0 (on a 4.0 scale) in at least one of the following:

*Degree Requirements minimum of 30 hours  
The Master of Science in Mathematics  
(Computational Mathematics Option) requires a  
minimum of 30 hours of graduate-level mathematics  
and computer science courses. A maximum of 12  
hours at the 400G level may be included in the  
entire program. All students in the M.S. program  
(computational mathematics option) must have a  
working knowledge of a high-level programming  
language. The CS classes required in this option do  
not allow for additional courses in a related field.*

Comprehensive exams are required only for students who choose not to write a thesis.

*Required Core*

*MATH/CS 405G Numerical Analysis I\*  
MATH 470G Introduction to Operations Research\*  
CS 549 Algorithms Analysis\*  
STAT 549 Statistical Methods I  
MATH 406G Numerical Analysis II  
At least two courses from the list below:  
CS 562 Parallel and Distributed Computing  
CS 565 Data Mining Techniques and Tools  
CS 595 Advanced Topics in Computer Science  
(with advisor approval)  
\*If equivalent courses were taken at the  
undergraduate level, then the student must  
substitute appropriate graduate mathematics  
courses selected in consultation with a Mathematics  
Department graduate advisor.*

*Electives*

*MATH 431G Intermediate Analysis I  
MATH 541 Graph Theory  
MATH 570 Topics in Operations Research  
MATH 504 Application of Technology to Problems in  
Mathematics  
MATH 540 Stochastic Processes  
MATH 542 Advanced Topics in Discrete  
Mathematics  
MATH 590 Special Topics in Mathematics (with  
advisor approval)  
STAT 550 Statistical Methods II*

*Research Tool*

*This requirement is satisfied by the computer  
science classes.*

*Optional Thesis 6 hours*

*Students who choose to write a thesis are required  
to complete 6 hours of MATH 599 Thesis Research*

(a) all mathematics and computer science courses that are listed in (a) through (d) of Item 2 above; or  
(b) all courses in the major listed in (e) of Item 2 above. Students cannot enter the program if they have a deficiency in the courses listed in Item 2 above

Degree Requirements minimum of 30 hours  
The Master of Science in Mathematics  
(Computational Mathematics Option) requires a  
minimum of 30 hours of graduate-level mathematics  
and computer science courses. A maximum of 12  
hours at the 400G level may be included in the entire  
program. All students in the M.S. program  
(computational mathematics option) must have a  
working knowledge of a high-level programming  
language. The CS classes required in this option do  
not allow for additional courses in a related field.

Comprehensive exams are required only for students who choose not to write a thesis.

*Required Core*

*MATH/CS 405G Numerical Analysis I\*  
MATH 470G Introduction to Operations Research\*  
CS 549 Algorithms Analysis\*  
STAT 549 Statistical Methods I  
MATH 406G Numerical Analysis II  
At least two courses from the list below:  
CS 562 Parallel and Distributed Computing  
CS 565 Data Mining Techniques and Tools  
CS 595 Advanced Topics in Computer Science (with  
advisor approval)  
\*If equivalent courses were taken at the  
undergraduate level, then the student must substitute  
appropriate graduate mathematics courses selected  
in consultation with a Mathematics Department  
graduate advisor.*

*Electives*

*MATH 431G Intermediate Analysis I  
MATH 541 Graph Theory  
MATH 570 Topics in Operations Research  
MATH 504 Application of Technology to Problems in  
Mathematics  
MATH 540 Stochastic Processes  
MATH 542 Advanced Topics in Discrete  
Mathematics  
MATH 590 Special Topics in Mathematics (with  
advisor approval)  
STAT 550 Statistical Methods II*

and Writing and to give an oral defense of the thesis.

#### Research Tool

This requirement is satisfied by a graduate level computer science class.

#### Optional Thesis 6 hours

Students who choose to write a thesis are required to complete 6 hours of MATH 599 Thesis Research and Writing and to give an oral defense of the thesis.

### Mathematical Economics Option

#### Admission Requirements

1. One of the following:

(a) A GRE score of at least 300. For options (a) or (b), a minimum score of 147 on the quantitative parts of the GRE,

(b) For students that graduate from WKU with a mathematics major, a GPA of at least 3.3 in their major,

(c) For students that graduate from WKU with a mathematical economics major, a GPA of at least 3.3 in their major,

(d) For students that graduate from WKU with an economics or business economics major, a GPA of at least 3.3- in the major and a GPA of at least 3.3 in the courses listed in 2.(a), (b),(d) and (e).

2. An undergraduate degree with a major in Economics, Mathematics, Mathematical Economics or other related majors with completion of the following undergraduate courses:

(a) a calculus sequence through multivariable calculus;

(b) discrete mathematics;

(c) principles of microeconomics and macroeconomics;

(d) one semester of junior or senior level probability theory,

(e) differential equations..

The Master of Science in Mathematics (Mathematical Economics option) requires a minimum of 30 hours of graduate-level mathematics and economics courses. A maximum of 12 hours at the 400G level may be included in the entire program.

#### Basic Requirements

ECON 465G Regression and Econometrics

ECON 502 Microeconomics

ECON 503 Macroeconomics

STAT 549 Statistical Methods I  
MATH 431G Intermediate Analysis-I or MATH 482G  
Probability and Statistics-II  
MATH 531 Advanced Differential Equations or  
STAT 550 Statistical Methods II

\*If equivalent courses were taken at the undergraduate level, then the student must substitute appropriate graduate mathematics courses or graduate economics courses selected in consultation with a Mathematics Department graduate advisor.

#### Electives

At most one 3 credit hours course in Economics can be taken as an elective.

MATH 405G Numerical Analysis I  
MATH 406G Numerical Analysis II  
MATH 431G Intermediate Analysis  
MATH 470G Introduction to Operations Research  
MATH 482G Probability and Statistics-II  
MATH 529 Applied Probability  
MATH 531 Advanced Differential Equations  
MATH 532 Real Analysis  
MATH 540 Stochastic Processes  
MATH 541 Graph Theory  
MATH 542 Advanced Topics in Discrete Mathematics  
MATH 570 Topics in Operations Research  
MATH 590 Special Topics in Mathematics (approval by the graduate advisor)  
MATH 598 Graduate Seminar  
STAT 550 Statistical Methods II  
ECON 594 Forecasting

#### Thesis Option 6 hours

Students who choose to write a thesis are required to complete 6 hours of MATH 599 Thesis Research and Writing and to give an oral defense of the thesis.

#### Non Thesis Option 3 hours

Students who choose not to write a thesis are required to complete 3 hours of Math 598

Comprehensive Exams are not required.

#### 4. Rationale for the proposed program change:

Recently, the mathematics and economics departments created a joint undergraduate degree program in mathematical economics that includes a general track and an actuarial track. Mathematical Economics option in the MS program in Mathematics would allow students with this

joint bachelor degree to continue graduate work in their field. The program would also be open to students from outside the mathematical economics major. The proposed program would also allow students with a strong background in mathematics to gain applied knowledge in economics. Additionally, the program would allow economics majors with strong quantitative backgrounds to enhance their mathematical skills.

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

Fall 2016

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

Department of Mathematics 2-19-16

Ogden College Graduate Curriculum Committee \_\_\_\_\_

Graduate Council \_\_\_\_\_

University Senate \_\_\_\_\_



Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 403G
  - 1.2. Course title: Geometry for Elementary and Middle School Teachers
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 205 and MATH 206 with a grade of C or better  
OR permission of instructor based on mathematical background and experience.  
Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department  
College Graduate Curriculum Committee  
Professional Education Council  
Graduate Council  
University Senate

1/21/2016  
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*\*Proposals to suspend, delete or reactivate a course require a Course Inventory Form be submitted by the College Dean's office to the Office of the Registrar.*

Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 405G
  - 1.2. Course title: Numerical Analysis I
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 237 or MATH 307 or MATH 310; and CS 180 or CS 146 or permission of instructor. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department  
College Graduate Curriculum Committee  
Professional Education Council  
Graduate Council  
University Senate

1/21/2016

*\*Proposals to suspend, delete or reactivate a course require a Course Inventory Form be submitted by the College Dean's office to the Office of the Registrar*

Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 406G
  - 1.2. Course title: Numerical Analysis II
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 237, MATH 307 and MATH 331; and either MATH 405 or CS 405. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	<u>1/21/2016</u>
College Graduate Curriculum Committee	_____
Professional Education Council	_____
Graduate Council	_____
University Senate	_____

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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 411G
  - 1.2. Course title: Problem solving for Elementary and Middle School Teachers
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 205, MATH 206, and MATH 308 with a grade of C or better, OR permission of instructor based on mathematical background and experience.  
Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approval

Math Department  
College Graduate Curriculum Committee  
Professional Education Council  
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1/21/2016

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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 413G
  - 1.2. Course title: Algebra and Technology for Middle Grades Teachers
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 117 or MATH 136 with a grade of C or better  
OR permission of instructor based on mathematical background and experience.  
Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department  
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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 415G
  - 1.2. Course title: Algebra and Number Theory
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 315 or MATH 317. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	<u>1/21/2016</u>
College Graduate Curriculum Committee	_____
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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 417G
  - 1.2. Course title: Algebraic Systems
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 317. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department  
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Revise a Course  
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Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 421G
  - 1.2. Course title: Problem Solving for Secondary Teachers
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 307 and MATH 310; MATH 382 and MATH 323, or permission of instructor.  
Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	<u>1/21/2016</u>
College Graduate Curriculum Committee	_____
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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 423G
  - 1.2. Course title: Geometry II
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 323. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department  
College Graduate Curriculum Committee  
Professional Education Council  
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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 429G
  - 1.2. Course title: Probability/Statistics II
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 237, MATH 382. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	<u>1/21/2016</u>
College Graduate Curriculum Committee	_____
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Contact Person: Natasha Gerstenschlager,  
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1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 431G
  - 1.2. Course title: Intermediate Analysis I
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 337 with a grade of C or better. Proposed:  
Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:  
As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
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Math Department	<u>1/21/2016</u>
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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 435G
  - 1.2. Course title: Partial Differential Equations
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 237, MATH 307, and MATH 331. Proposed:  
Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:  
As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	<u>1/21/2016</u>
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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 439G
  - 1.2. Course title: Topology I
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 317 or permission of instructor. Proposed:  
Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:  
As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	<u>1/21/2016</u>
College Graduate Curriculum Committee	_____
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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 450G
  - 1.2. Course title: Complex Variables
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 237. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department  
College Graduate Curriculum Committee  
Professional Education Council  
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1/21/2016  
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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 470G
  - 1.2. Course title: Introduction to Operations Research
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 237 and MATH 307. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	_____ 1/21/2016
College Graduate Curriculum Committee	_____
Professional Education Council	_____
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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 482G
  - 1.2. Course title: Probability & Statistics II
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 237, MATH 382. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	<u>1/21/2016</u>
College Graduate Curriculum Committee	_____
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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 502
  - 1.2. Course title: Introduction to Probability and Statistics II
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 183 or MATH 382 or MATH 501 or permission of instructor. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	<u>1/21/2016</u>
College Graduate Curriculum Committee	_____
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(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 508
  - 1.2. Course title: Number Concepts for Elementary and Middle Grades Teachers
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 205, MATH 206 and MATH 308 or permission of instructor. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
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Math Department  
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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager

[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 517
  - 1.2. Course title: Topics from Algebra
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 417. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
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Math Department	<u>1/21/2016</u>
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Revise a Course  
(Action)

Date: 11/20/2015

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Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 529
  - 1.2. Course title: Applied Probability
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 431 or MATH 237. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
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Math Department	<u>1/21/2016</u>
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Revise a Course  
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Date: 11/20/2015

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Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 531
  - 1.2. Course title: Advanced Differential Equations
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 331, MATH 431. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
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Spring 2016
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Math Department	_____ 1/21/2016
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Revise a Course  
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Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 532
  - 1.2. Course title: Real Analysis
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 431. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department  
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College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
[natasha.gerstenschlager@wku.edu](mailto:natasha.gerstenschlager@wku.edu), 5-7048

1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 535
  - 1.2. Course title: Advanced Applied Mathematics
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 331, MATH 431. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	_____ 1/21/2016
College Graduate Curriculum Committee	_____
Professional Education Council	_____
Graduate Council	_____
University Senate	_____

*\*Proposals to suspend, delete or reactivate a course require a Course Inventory Form be submitted by the College Dean's office to the Office of the Registrar*

Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
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1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 539
  - 1.2. Course title: Topology II
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 439. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	<u>1/21/2016</u>
College Graduate Curriculum Committee	_____
Professional Education Council	_____
Graduate Council	_____
University Senate	_____

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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
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1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 540
  - 1.2. Course title: Stochastic Processes
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 529 or MATH 382 with a grade of C or better, or consent of instructor. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	_____ 1/21/2016
College Graduate Curriculum Committee	_____
Professional Education Council	_____
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University Senate	_____

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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
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1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 542
  - 1.2. Course title: Advanced Topics in Discrete Mathematics
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 310 and MATH 317. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department	<u>1/21/2016</u>
College Graduate Curriculum Committee	_____
Professional Education Council	_____
Graduate Council	_____
University Senate	_____

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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
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1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 550
  - 1.2. Course title: Complex Analysis
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 450. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department  
College Graduate Curriculum Committee  
Professional Education Council  
Graduate Council  
University Senate

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1/21/2016  
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Revise a Course  
(Action)

Date: 11/20/2015

College, Department: Ogden, Mathematics

Contact Person: Natasha Gerstenschlager,  
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1. Identification of course
  - 1.1. Course prefix (subject area) and number: MATH 570
  - 1.2. Course title: Topics in Operations Research
2. Proposed change(s):
  - 2.1. Course number:
  - 2.2. Course title:
  - 2.3. Credit hours:
  - 2.4. Grade type:
  - 2.5. Prerequisites: Current: MATH 470. Proposed: Permission of instructor.
  - 2.6. Corequisites:
  - 2.7. Course description:
  - 2.8. Other:
3. Rational for revision of course:

As this a graduate level course, WKU undergraduate prerequisite courses cannot be required.
4. Term of implementation  
Spring 2016
5. Dates of committee approvals:

Math Department

College Graduate Curriculum Committee

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1/21/2016

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