

MEMORANDUM TO: Ogden College of Science and Engineering Curriculum Committee

Dr. Jack Rudolph	Dr. James Gary	Dr. Greg Arbuckle
Dr. Martin Stone	Dr. Rong Yang	Dr. John Khouryieh
Dr. Bruce Schulte	Dr. Julie Ellis	Dr. Bruce Kessler
Dr. Phil Lienesch	Dr. Warren Campbell	Dr. Richard Schugart
Dr. Cathleen Webb	Dr. David Keeling	Dr. Keith Andrew
Dr. Hemali Rathnayake	Dr. Xingang Fan	
Dr. Les Pesterfield		

FROM: Kenneth Crawford, Chair

SUBJECT: Agenda for Thursday, September 5, 2013, 4:00 p.m. in COHH 4123

A. OLD BUSINESS:

- I. Consideration of the minutes of the April 4, 2013, meeting.

B. NEW BUSINESS:

Information Items

Department of Engineering

- I. Proposal to Create a Temporary Course
 - a. ENGR 250, Early Engineering Experiences in Industry, 3 hrs.

Department of Geography and Geology

- I. Proposal to Revise Course Prefix (Meteorology)
 - a. GEOG

Consent Items

Department of Architectural and Manufacturing Sciences

- I. Proposal to Delete a Course
 - a. GC 209, Graphical Analysis, 1.5 hrs.
 - b. MT 317, Metal Process I, 3 hrs.
- II. Proposal to Revise Course Prerequisites
 - a. AMS 120, Basic Electricity, 3 hrs.
 - b. AMS 217, Industrial Materials, 3 hrs.
 - c. AMS 328, Robotics & Mach Vision, 3 hrs.
 - d. AMS 342, Manufacturing Operations, 3 hrs.
 - e. AMS 352, Food Processing: Unit Operations, 3 hrs.
 - f. AMS 356, Food Processing: Unit Operations, 3 hrs.
 - g. AMS 371, Quality Assurance, 3 hrs.
 - h. AMS 394, Lean Manufacturing, 3 hrs.
 - i. AMS 396, Intro Supply Chain Management, 3 hrs.

Department of Geography and Geology

- I. Proposal to Revise Course Number
 - a. GEOG 424, Weather Analysis and Forecasting, 3 hrs.
 - b. GEOG 444. Environmental Ethics in Geography, 3 hrs.

Action Items

Department of Architectural and Manufacturing Sciences

- I. Proposal to Revise a Program
 - a. Ref. #506, Advanced Manufacturing, 74 hrs.
 - b. Ref. #1718, Food Processing and Technology, 18 hrs.

Department of Geography and Geology

- I. Proposal to Make Multiple Revisions to a Course
 - a. GEOG 464, Geography of Europe, 3 hrs.

- II. Proposal to Revise Course Credit Hours
 - a. GEOG 391, Spatial Data Analysis and Interpretation, 3 hrs.

- III. Proposal to Create a New Course
 - a. GEOG 226, Our Dangerous Planet, 3 hrs.
 - b. GEOG 227, Our Vulnerable Planet, 3 hrs.

C. OTHER BUSINESS

- I. Elective representative and alternate to UCC.

MEMBERS PRESENT:

Dr. Martin Stone
Dr. Bruce Schulte
Dr. Les Pesterfield
Dr. James Gary
Dr. Huanjing Wang
Dr. Julie Ellis

Dr. David Keeling
Dr. Xingang Fan
Dr. John Khouryieh
Dr. Bruce Kessler
Dr. Keith Andrew

FROM: Ken Crawford, Chair

This meeting was held electronically. The members present voted via email.

OLD BUSINESS:

Keeling/Khouryieh moved approval of the minutes from the March 7, 2013, meeting. Motion passed.

NEW BUSINESS:

Consent Agenda

Department of Engineering

Keeling/Khouryieh moved approval of the consent item, Proposal to Revise Course Prerequisites/Corequisites, EE 470, Communications and Modulation. Motion passed.

OTHER BUSINESS:

There was no other business.

**Ogden College of Science and Engineering
Department of Engineering
Proposal to Create a Temporary Course
Information Item: First Offering**

Contact Person: Julie Ellis, julie.ellis@wku.edu, 270.745.2461

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: ENGR 250
- 1.2 Course title: Early Engineering Experiences in Industry
- 1.3 Abbreviated course title: Engineering in Industry
- 1.4 Credit hours: 3.0
- 1.5 Schedule type: K (Workshop)
- 1.6 Prerequisites: ENG100 and MATH137 and PHYS 255
- 1.7 Grade type: standard letter grade pass/fail in progress (IP)
- 1.8 Course description:

For students about to transition from an engineering pre-major to an engineering major. Students explore a sequence of industry-based cases illustrating basic engineering principles applied in local engineering sites. Interactions with practicing engineers provide real-world applications of selected topics, while traditional instruction provides basic theory and underlying principles that pertain to the cases. Presentations, teamwork, experimentation, and professional communication are emphasized and practiced. This is a short-term (3 or 4 weeks) Study Away course, with a set program fee. Transportation to the industrial sites is included.

2. Rationale

- 2.1 Reason for offering this course on a temporary basis:

We wish to see whether the concept works and is appealing to students, faculty, and industrial partners. We also wish to determine whether it can be implemented on an ongoing and sustainable basis.
- 2.2 Relationship of the proposed course to courses offered in other academic units:

There is no other industry-based course like this offered for engineering students, with extensive field experiences. The structure may be readily applicable to other professions and majors in other academic units.

3. Description of proposed course

3.1 Course content outline

This course is designed for a 3- or 4-week term and focuses on specific technical concepts and skills that typically are *not* covered in the standard required engineering curriculum, but that *are* used in real industry applications. Examples include industrial automation, statistical process control, energy management, and the environmental impacts of modern manufacturing. The point is to give students some exposure to the basic concepts of each topic in the form of standard academic instruction plus a real-world application — a case drawn from local industry. Industrial partners are on board to help in developing these cases and in hosting these students in

the field experiences.

Students will prepare summative presentations of one concept they have explored more deeply on their own as their final work product. These presentations will be shared with faculty and the industrial partners at a final event near the conclusion of the course.

3.2 Tentative text(s)

Success through Failure: The Paradox of Design by Henry Petroski, Princeton University Press, Aug 7, 2013

Technical resources, both in print and in web form, will be selected when the final topics are chosen.

4. **Second offering of a temporary course (if applicable)** N.A.

5. **Term of Implementation:** Winter 2014, as a Study Away course

6. **Dates of review/approvals:**

Department of Engineering 29Aug2013

Dean, Ogden College of Science and
Engineering 09/02/13

Proposal date: August 19, 2013

**Ogden College of Science and Engineering
Department of Geography and Geology
Proposal to Revise Course Prefix (Meteorology)
(Information Item)**

Contact Person: Greg Goodrich, 745-5986, gregory.goodrich@wku.edu

1. Identification of current course prefix: GEOG

2. Identification of proposed course prefix: METR

3. Rationale for the prefix revision: When the B.S. in Meteorology degree was created in 2008, all of the new courses for the program were created under the GEOG prefix. This was done because several courses for the new meteorology degree pre-existed as part of the original B.S. Geography – Land, Weather, Climate track. With the growth and success of the B.S. in Meteorology degree, we want to create the METR prefix to differentiate the meteorology program courses from other courses in the Department of Geography and Geology.

4. Course numbers to be included under the new course prefix:

- GEOG 121**
- GEOG 122**
- GEOG 322**
- GEOG 325**
- GEOG 422**
- GEOG 424**
- GEOG 426**
- GEOG 431**
- GEOG 432**
- GEOG 433**
- GEOG 437**
- GEOG 438**
- GEOG 439**

5. Term of implementation: Fall 2014

6. Dates of notification to committees:

Department of Geography and Geology

8/21/2013

Ogden College Curriculum Committee

General Education Committee

Undergraduate Curriculum Committee (if applicable)

University Senate

Proposal Date: 7/10/13

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

Contact Person: Dr. Greg Arbuckle, greg.arbuckle@wku.edu, 745-6592

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: GC 209
- 1.2 Course title: Graphical Analysis
- 1.3 Credit hours: 1.5

2. Rationale for the course deletion: This course has not been offered in over 10 years. All other courses with this prefix were either deleted many years ago or were incorporated into the AMS prefix. Somehow this one course persisted. This is a “housekeeping” issue.

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

None

4. Proposed term for implementation:

Spring 2014

5. Dates of prior committee approvals:

AMS Department/Division: July 11, 2013

Ogden Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

Proposal Date: 7/10/13

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

Contact Person: Dr. Greg Arbuckle, greg.arbuckle@wku.edu, 745-6592

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: MT 317
- 1.2 Course title: Metal Process I
- 1.3 Credit hours: 3

2. Rationale for the course deletion: This course has not been offered in over 10 years. All other courses with this prefix were either deleted many years ago or were incorporated into the AMS prefix. Somehow this one course persisted. This is a “housekeeping” issue.

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

None

4. Proposed term for implementation:

Spring 2014

5. Dates of prior committee approvals:

AMS Department/Division: July 11, 2013

Ogden Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

Proposal Date: 8-20-2013

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

Contact Person: Bryan Reaka, bryan.reaka@wku.edu 270.745.7032

1. Identification of course:

- 1.1 Course prefix (subject area) and number: AMS 120
- 1.2 Course title: Basic Electricity
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 118

3. Proposed prerequisites: Eligibility for MATH 116

4. Rationale for the revision of prerequisites: MATH 118 is no longer taught by the Math Department. It has been determined that if the student has the appropriate training in functions, graphs and fundamental concepts of algebra, the student will have the prerequisite knowledge to grasp the concepts in AMS 120.

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

6. Proposed term for implementation: Spring 2014

7. Dates of prior committee approvals:

Architectural and Manufacturing Sciences Department 8-21-2013

OCSE Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

Proposal Date: 8-20-2013

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

Contact Person: Bryan Reaka, bryan.reaka@wku.edu 270.745.7032

- 1. Identification of course:**
 - 1.1 Course prefix (subject area) and number: AMS 217
 - 1.2 Course title: Industrial Materials
 - 1.3 Credit hours: 3

- 2. Current prerequisites: None**

- 3. Proposed prerequisites: MATH 116 or Higher**

- 4. Rationale for the revision of prerequisites:** Students coming into this class need background in graphs, absolute values, radicals and logarithmic functions in order to better understand the tensile/ compressive properties of materials during the testing procedures that are covered in this course.

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

- 6. Proposed term for implementation: Spring 2014**

- 7. Dates of prior committee approvals:**

Architectural and Manufacturing Sciences Department:	8-21-2013
OCSE Curriculum Committee	
Undergraduate Curriculum Committee	
University Senate	

Attachment: Course Inventory Form

Proposal Date: 8-20-2013

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

Contact Person: Bryan Reaka, bryan.reaka@wku.edu 270.745.7032

1. Identification of course:

- 1.1 Course prefix (subject area) and number: AMS 328
- 1.2 Course title: Robotics & Mach Vision
- 1.3 Credit hours: 3

2. Current prerequisites: AMS 227

3. Proposed prerequisites: none

4. Rationale for the revision of prerequisites: Upon review by members of the Industrial Advisory Board, AMS 328 has been deemed to be an in depth course on the topic of robotics and machine vision, and no prior requirements or knowledge other than the ability to do college-level work is needed to matriculate successfully through the course.

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

6. Proposed term for implementation: Spring 2014

7. Dates of prior committee approvals:

Architectural and Manufacturing Sciences Department 8-21-2013

OCSE Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

Proposal Date: 8-20-2013

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

Contact Person: Bryan Reaka, bryan.reaka@wku.edu 270.745.7032

1. Identification of course:

- 1.1 Course prefix (subject area) and number: AMS 342
- 1.2 Course title: Manufacturing Operations
- 1.3 Credit hours: 3

2. Current prerequisites: AMS 271

3. Proposed prerequisites: none

4. Rationale for the revision of prerequisites: Upon review by members of the Industrial Advisory Board, it has been decided that this course does not need the prerequisite skills sets that the AMS 271 (Industrial Statistics) class offers.

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

6. Proposed term for implementation: Spring 2014

7. Dates of prior committee approvals:

Architectural and Manufacturing Sciences Department 8-21-2013

OCSE Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

Proposal Date: 8-20-2013

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

Contact Person: Bryan Reaka, bryan.reaka@wku.edu 270.745.7032

1. Identification of course:

- 1.1 Course prefix (subject area) and number: AMS 352
- 1.2 Course title: Food Processing: Unit Operations
- 1.3 Credit hours: 3

2. Current prerequisites: AMS 301

3. Proposed prerequisites: none

4. Rationale for the revision of prerequisites: This course deals with the techniques of processing in food industries. The current prerequisite deals with the biological aspects of processing which are not necessary for the success of students in AMS 352.

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

6. Proposed term for implementation: Spring 2014

7. Dates of prior committee approvals:

Architectural and Manufacturing Sciences Department: 8-21-2013

OCSE Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

Proposal Date: 8-20-2013

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

Contact Person: Bryan Reaka, bryan.reaka@wku.edu 270.745.7032

- 1. Identification of course:**
 - 1.1 Course prefix (subject area) and number: AMS 356
 - 1.2 Course title: Food Processing: Unit Operations
 - 1.3 Credit hours: 3

- 2. Current prerequisites: MATH 118 or MATH 116 or MATH 117 or AMS 271**

- 3. Proposed prerequisites: AMS 271**

- 4. Rationale for the revision of prerequisites:** MATH 116 is a prerequisite to AMS 271 therefore it does not need to be listed here.

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

- 6. Proposed term for implementation: Spring 2014**

- 7. Dates of prior committee approvals:**

Architectural and Manufacturing Sciences Department	_____ 8-21-2013 _____
OCSE Curriculum Committee	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

Proposal Date: 8-20-2013

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

Contact Person: Bryan Reaka, bryan.reaka@wku.edu 270.745.7032

1. Identification of course:

- 1.1 Course prefix (subject area) and number: AMS 371
- 1.2 Course title: Quality Assurance
- 1.3 Credit hours: 3

2. Current prerequisites: MATH 183 or AMS 271

3. Proposed prerequisites: None

4. Rationale for the revision of prerequisites: AMS 371 is a qualitative course dealing with quality organizations and standards. The statistical prerequisites courses are not needed for students to understand the structure of the course material.

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

6. Proposed term for implementation: Spring 2014

7. Dates of prior committee approvals:

Architectural and Manufacturing Sciences Department 8-21-2013

OCSE Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

Proposal Date: 8-20-2013

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

Contact Person: Bryan Reaka, bryan.reaka@wku.edu 270.745.7032

1. Identification of course:

- 1.1 Course prefix (subject area) and number: AMS 394
- 1.2 Course title: Lean Manufacturing
- 1.3 Credit hours: 3

2. Current prerequisites: AMS 356

3. Proposed prerequisites: None

4. Rationale for the revision of prerequisites: The topics covered in Lean Manufacturing deal with production systems in market characterization, aggregate planning and just-in-time philosophy. Although the topics taught in AMS 356 are tangentially related to all of these, they are not required as a prerequisite skill set for students to matriculate successfully through AMS 394.

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

6. Proposed term for implementation: Spring 2014

7. Dates of prior committee approvals:

Architectural and Manufacturing Sciences Department: 8-21-2013

OCSE Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

Proposal Date: 8-20-2013

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

Contact Person: Bryan Reaka, bryan.reaka@wku.edu 270.745.7032

1. Identification of course:

- 1.1 Course prefix (subject area) and number: AMS 396
- 1.2 Course title: Intro Supply Chain Management
- 1.3 Credit hours: 3

2. Current prerequisites: AMS 356 and AMS 371

3. Proposed prerequisites: None

4. Rationale for the revision of prerequisites: The topics covered in Supply Chain Management deal with logistics, the value of information and decision support systems. Although the topics taught in AMS 356 and AMS 371 are related to all of these, they are not required as a prerequisite skill set for students to matriculate successfully through AMS 396.

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

6. Proposed term for implementation: Spring 2014

7. Dates of prior committee approvals:

Architectural and Manufacturing Sciences Department 8-21-2013

OCSE Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Course Inventory Form

Proposal Date: August 19, 2013

**Ogden College of Science and Engineering
Department of Geography and Geology
Proposal to Revise Course Number
(Consent Item)**

Contact Person: Greg Goodrich, 745-5986, gregory.goodrich@wku.edu

1. Identification of proposed course

1.1 Course prefix (subject area) and number: GEOG 424

1.2 Course title: Weather Analysis and Forecasting

2. Proposed course number: GEOG 324

3. Rationale for revision of course number: GEOG 424 was one of the higher-level courses of the original B.S. in Geography – Land, Weather, Climate track. With the creation of the B.S. in Meteorology degree in 2008, GEOG 424 became the prerequisite for the rest of the newly created upper-division meteorology courses. This renumbering from 424 to 324 better reflects the course progression of the B.S. in Meteorology degree.

NOTE: A proposal has been submitted to change the prefix for Meteorology courses from GEOG to METR, so in Fall 2014 this course will change from GEOG 424 to METR 324.

4. Proposed term for implementation: Fall 2014

5. Dates of prior committee approvals:

Department of Geography and Geology

8/21/2013

Ogden College Curriculum Committee

Undergraduate Curriculum Committee

University Senate

Proposal Date: August 1, 2013

**Ogden College of Science and Engineering
Department of Geography and Geology
Proposal to Revise Course Number
(Consent Item)**

Contact Person: David Keeling (david.keeling@wku.edu), 5-4555

- 1. Identification of course:**
 - 1.1 Current course prefix (subject area) and number: GEOG 444
 - 1.2 Title: Environmental Ethics in Geography
 - 1.3 Credit hours: 3

- 2. Proposed course number:** GEOG 344

- 3. Rationale for the revision of course number:** The Department is revising its course sequencing as part of its move to ensure a four-year program completion cycle and to make sure that connections between foundation and capstone courses are rational and meaningful. Environmental Ethics should be taken in the Junior year before taking senior-level courses in environment and sustainability.

- 4. Proposed term for implementation:** 201430

- 5. Dates of prior committee approvals:**

Department of Geography and Geology	<u>8/21/2013</u>
Ogden College Curriculum Committee	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

Proposal Date: August 20, 2013

Ogden College of Science and Engineering
Department of Architectural and Manufacturing Sciences
Proposal to Revise a Program
(Action Item)

Contact Person: Bryan Reaka bryan.reaka@wku.edu 745-7032

1. Identification of program:

- 1.1 Current program reference number: 506
- 1.2 Current program title: Advanced Manufacturing
- 1.3 Credit hours: 74

2. Identification of the proposed program changes:

Changes for all concentrations

- Remove all concentrations

Changes to Advanced Manufacturing Major

- Technical Core - Add the option for students of MKT 220 or FIN161 as well as keeping the option of ACCT 200
- Technical Core – Add the option for students of UC 400 as well as keeping AMS 398 as an option
- Management Core – Remove ENG 306 or ENG 307
- Management Core - Add the option for students of BUS 214C or COMM 346 or COMM 349 or COMM 362 or MGT 361 as well as keeping COMM 345 as an option
- Management Core – Add the option of MGT 200 or MGT 333 as well as keeping the option of MGT 301
- Management Core – Reduce number of hours from 30 to 27
- Advanced Manufacturing Core – Change name of the concentration to core
- Advanced Manufacturing Core – Add the option for students of CM 337 as well as keeping the option of AMS 217
- Advanced Manufacturing Core – Add AMS 352 to the core
- Advanced Manufacturing Core – Adjust the advisor-approved electives from 10 to 11/12
- Advanced Manufacturing Core – Adjust hours needed in the core from 25 to 28/29
- General Education – Adjust hours needed in General Education from 46 to 44/45
- General Education – Remove requirement of ECON 202 and replace with Category C elective
- General Education – Change the math from MATH 117, or MATH 118 or Higher to MATH 117 or higher
- General Education – Remove requirement of CHEM 116/106 to a Cat D course

- General Education – Remove requirement of PHYS 201 to a Category D Lab course
- General Education – Remove requirement of SFTY 171 to a Category F course

3. Detailed program description:

Advanced Manufacturing (Old) 74			Advanced Manufacturing (New) 74		
Manufacturing & Industrial Distribution			No Concentration		
<i>Technical Core: 19hrs</i>			<i>Technical Core: 19hrs</i>		
Introductory Accounting - Financial	ACCT200	3	Introductory Accounting or Basic Marketing Concepts or Personal Finance	ACCT200 or MKT 220 or FIN 161	3
Basic Electricity	AMS120	3	Basic Electricity	AMS120	3
Architectural Drafting or CADD for Manufacturing	AMS 163/205	3	Architectural Drafting or CADD for Manufacturing	AMS 163/205	3
Industrial Statistics	AMS271	3	Industrial Statistics	AMS271	3
Internship I	AMS398	1	Mentored Research Experience or Internship I	UC 400 or AMS398	1
Senior Research	AMS490	3	Senior Research	AMS490	3
Robotics and Machine Vision	AMS 328	3	Robotics and Machine Vision	AMS 328	3
Management Core: 30hrs			Management Core: 27hrs		
Work Design/Ergonomics	AMS310	3	Work Design/Ergonomics	AMS310	3
Systems Design and Operation	AMS356	3	Systems Design and Operation	AMS356	3
Project Management	AMS390	3	Project Management	AMS390	3
Technology Mgmt./Sup./Team Blding	AMS430	3	Technology Mgmt./Sup./Team Blding	AMS430	3
Business Writing or Technical Writing	ENG 306 or 307	3			
Advanced Public Speaking	COMM345	3	Basic Business Communications or Advanced Public Speaking or Persuasion or Interpersonal Communication or Group Decision Making or Organizational Communication or Business Communication Fundamentals	BUS 214C or COMM 345 or COMM 346 or COMM 349 or COMM 362 or MGT 361	3
Business Law	MGT301	3	Legal Environment of Business or Business Law or MGMT of Nonprofit Org	MGT 200 or MGT301 or MGT 333	3
Quality Assurance	AMS371	3	Quality Assurance	AMS371	3
Lean Manufacturing	AMS 394	3	Lean Manufacturing	AMS 394	3
Intro to Supply Chain Management	AMS 396	3	Intro to Supply Chain Management	AMS 396	3
Manufacturing & Industrial Distribution Conc: 25hrs			Advanced Manufacturing Core: 28-29hrs		
Industrial Materials	AMS217	3	Industrial Materials or Applied Strength of Materials	AMS217 or CM337	3
Manufacturing Methods	AMS227	3	Manufacturing Methods	AMS227	3
Manufacturing Operations	AMS342	3	Manufacturing Operations	AMS342	3
Automated Systems	AMS343	3	Automated Systems	AMS343	3
			Food Processing: Unit Operation	AMS352	3
Computer Numeric Control	AMS370	3	Computer Numeric Control	AMS370	3

Advisor Approved Electives		10	Advisor Approved Electives		11-12
General Education (Old)		46 hrs	General Education (New)		44-45 hrs
Category A	ENG100	3		ENG100	3
	ENG300	3		ENG300	3
	Foreign Lang	3		Foreign Lang	3
	Public Speaking	3		Public Speaking	3
Category B	Lit. Elective	3		Lit. Elective	3
	Category B-II	3		Category B-II	3
	Category B-II	3		Category B-II	3
Category C	HIST119/120	3		HIST119/120	3
	ECON202	3		Category C	3
	Category C	3		Category C	3
Category D	MATH 117, or MATH 118 OR HIGHER	3		MATH 117, or HIGHER	3
	CHEM 116	3		Category D	3
	CHEM 106	1			
	PHYS201	4		Category D Lab	3-4
Category E	Category E	3		Category E	3
Category F	SFTY171	1			
	Category F	1		Category F	2
Program Grand Total Hours:		120	Program Grand Total Hours:		120

Advanced Manufacturing (Old)		74	(New)None	
Food Processing and Technology				
<i>Technical Core: 19hrs</i>				
Introductory Accounting - Financial	ACCT200	3		
Basic Electricity	AMS120	3		
Architectural Drafting or CADD for Manufacturing	AMS 163/205	3		
Industrial Statistics	AMS271	3		
Internship I	AMS398	1		
Senior Research	AMS490	3		
Robotics and Machine Vision	AMS 328	3		
<i>Management Core: 30hrs</i>				
Work Design/Ergonomics	AMS310	3		
Systems Design and Operation	AMS356	3		
Project Management	AMS390	3		
Technology Mgmt./Sup./Team Blding	AMS430	3		

Business Writing or Technical Writing	ENG 306 or 307	3	
Advanced Public Speaking	COMM345	3	
Business Law	MGT301	3	
Quality Assurance	AMS371	3	
Lean Manufacturing	AMS 394	3	
Intro to Supply Chain Management	AMS 396	3	
Food Processing and Technology Conc: 25hrs			
Science of Food Processing	AMS 301	3	
Food Laws and Regulations	AMS 303	3	
Automated Systems	AMS 343	3	
Food Processing: Unit Operations	AMS 352	3	
Fundamentals of HACCP	AMS 395	3	
Food Quality Assurance	AMS 381	3	
Food Packaging	AMS 443	3	
Commodity Food Processing	AMS 462	3	
Advisor Approved Electives		1	
General Education (OLD)		46 hrs	
Category A	ENG100	3	
	ENG300	3	
	Foreign Lang	3	
	Public Speaking	3	
Category B	Lit. Elective	3	
	Category B-II	3	
	Category B-II	3	
Category C	HIST119/120	3	
	ECON202	3	
	Category C	3	
Category D	MATH 117, or MATH 118 OR HIGHER	3	
	CHEM 105	3	
	CHEM 106	1	
	BIO 207	3	
	BIO 208	1	
Category E	Category E	3	
Category F	SFTY171	1	
	Category F	1	
Program Grand Total Hours:		120	

Advanced Manufacturing	(Old)	74	
Quality Systems			(New) NONE
Technical Core: 19hrs			

Introductory Accounting - Financial	ACCT200	3	
Basic Electricity	AMS120	3	
Architectural Drafting or CADD for Manufacturing	AMS 163/205	3	
Industrial Statistics	AMS271	3	
Internship I	AMS398	1	
Senior Research	AMS490	3	
Robotics and Machine Vision	AMS 328	3	
Management Core: 30hrs			
Work Design/Ergonomics	AMS310	3	
Systems Design and Operation	AMS356	3	
Project Management	AMS390	3	
Technology Mgmt./Sup./Team Blding	AMS430	3	
Business Writing or Technical Writing	ENG 306 or 307	3	
Advanced Public Speaking	COMM345	3	
Business Law	MGT301	3	
Quality Assurance	AMS371	3	
Lean Manufacturing	AMS 394	3	
Intro to Supply Chain Management	AMS 396	3	
Quality Systems Conc: 25hrs			
Industrial Materials	AMS217	3	
Manufacturing Operations	AMS342	3	
Computer Numeric Control	AMS370	3	
Reliability & Probability	AMS 391	3	
Quality Management	AMS392	3	
Design of Industrial Experiments	AMS471	3	
Advisor Approved Electives		7	
General Education (OLD) 44 hrs			
Category A	ENG100	3	
	ENG300	3	
	Foreign Lang	3	
	Public Speaking	3	
Category B	Lit. Elective	3	
	Category B-II	3	
	Category B-II	3	
Category C	HIST119/120	3	
	ECON202	3	
	Category C	3	
Category D	MATH 117, or MATH 118 OR HIGHER	3	
	Category D-II	3	
	Category DI-I	3	

Category E		Category E	3	
Category F		SFTY171	1	
Category F		1		
Electives				
Electives			2	
Program Grand Total Hours:			120	

4. Rationale for the proposed program change:

Changes for all concentrations

- Remove all concentrations

This is being done due to low enrollments in some of the concentrations in the program. We are consolidating to lower the number of required course offerings in the program.

Changes to Advanced Manufacturing Major

- Technical Core - Add the option for students of MKT 220 or FIN161 as well as keeping the option of ACCT 200.

This will allow students to have different options for courses that are offered by the College of Business.

- Technical Core – Add the option for students of UC 400 as well as keeping AMS 398 as an option.

UC 400 is required of students who are completing a FUSE grant with the University.

- Management Core – Remove ENG 306 or ENG 307

Writing across all levels of coursework has been initiated in the Advanced Manufacturing Program. This includes sessions on resume writing and technical memos for the students.

- Management Core - Add the option for students of BUS 214 or COMM 346 or COMM 349 or COMM 362 or MGT 361 as well as keeping COMM 345 as an option.

This allows students more scheduling options for courses in the business/ advanced communication areas.

- Management Core – Add the option of MGT 200 or MGT 333 as well as keeping the option of MGT 301.

This allows students more scheduling options for courses in the business law area.

- Management Core – Reduce number of hours from 30 to 27

This reduction occurs due to the removal of ENG 306/307 from list of required courses.

- Advanced Manufacturing Core – Change name of the concentration to Core
The core name will be the same as the major since the concentrations no longer exist.

- Advanced Manufacturing Core – Add the option for students to take CM 337 as well as keeping the option of AMS 217.

This allows students more scheduling options for courses.

- Advanced Manufacturing Core – Add AMS 352 to the core

Approximately 15 percent of the graduates from the Advanced Manufacturing Program have gone to work in the foods industries. With the removal of the Food Processing and Technology Concentration, the food industry has suggested that AMS 352 Food Processing: Unit Operations be added to the curriculum.

- Advanced Manufacturing Core – Adjust the advisor-approved electives from 10 to 11/12
This is due to an adjustment in the General Education hours which allows more freedom in the advisor-approved electives.
- Advanced Manufacturing Core – Adjust hours needed in the core from 25 to 28/29
This is due to an adjustment in the General Education hours which allows more freedom in the advisor-approved electives.
- General Education – Adjust hours needed in General Education from 46 to 44/45
This is due to the removal of prescribed classes in Category D.
- General Education – Remove requirement of ECON 202 and replace with Category C elective
Many students transfer into the program with the Category C general education completed.
- General Education – Change the math from MATH 117, or MATH 118 or higher to MATH 117 or higher.
MATH 118 is no longer taught by the Math Department.
- General Education – Remove requirement of CHEM 116/106 to a Cat D course.
With the consolidation of the program, the diversity of students’ career goals will be addressed during advising as to which course they should take in this area.
- General Education – Remove requirement of PHYS 201 to a Category D Lab course
With the consolidation of the program the diversity of students’ career goals will be addressed during advising as to which course they should take in this area.
- General Education – Remove requirement of SFTY 171 to a Category F course.
This will allow students who come to the program with this category already completed to not have to take an additional course. Almost all companies include safety and first aid training in their orientation of new employees.

5. Effective Catalog Year: 2014-2015

6. Dates of prior committee approvals:

Architectural and Manufacturing Sciences Department	_____ 8-21-2013 _____
OCSE Curriculum Committee	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Proposal Date: 08/20/2013

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

Contact Person: John Khouryieh, hanna.khouryieh@wku.edu, 270-745-4126

1. Identification of program:

- 1.1 Current program reference number: 1718
- 1.2 Current program title: Food Processing and Technology
- 1.3 Credit hours: 18

2. Identification of the proposed program changes:

- Reduce the certificate total credit hours from 18 to 12.
- Remove AMS443
 - Remove AMS462
 - Remove AMS381
 - Remove AMS271

3. Detailed program description:

(OLD)		
Food Processing and Technology		
<i>Core Courses (9 credits)</i>		
Introduction to Food Science & Technology	AMS 301	3
Food Laws and Regulations	AMS 303	3
Food Processing: Unit Operations	AMS 352	3
<i>Elective Courses (choose 9 credits)</i>		
Fundamentals of HACCP	AMS 395	3
Food Packaging	AMS 443	3
Commodity Food Processing	AMS 462	3
Food Quality Assurance	AMS 381	3
Industrial Statistics	AMS 271	3
Program Total Hours:		18

(NEW)		
Food Processing and Technology		
Introduction to Food Science & Technology	AMS 301	3
Food Laws and Regulations	AMS 303	3
Food Processing: Unit Operations	AMS 352	3
Fundamentals of HACCP	AMS 395	3
Program Total Hours:		12

4. Rationale for the proposed program change:

The purpose of the certificate is to provide students and professionals working in the food industry with the necessary knowledge in food processing, quality assurance and food safety to advance their careers. The previous courses are not necessary for the success of students in this certificate. Only the core courses (AMS 301, 303, 352 and 395) are needed to provide students with necessary knowledge to succeed in the food processing industry. In addition, the enrollment is currently low in the certificate so by removing those extra courses we are expecting the enrollment will be increased and the certificate will become more attractive to students and professionals as they will finish it in as many as two semesters.

5. Proposed term for implementation and special provisions (if applicable): Spring 2014

6. Dates of prior committee approvals:

Architectural and Manufacturing Sciences Department	08/21/2013
OCSE Curriculum Committee	
Undergraduate Curriculum Committee	
University Senate	

Proposal Date: 8/29/2013

**Ogden College of Science and Engineering
Department of Geography and Geology
Proposal to Make Multiple Revisions to a Course
(Action Item)**

Contact Person: David Keeling (david.keeling@wku.edu), 5-4555

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: GEOG 464
- 1.2 Course title: Geography of Europe

2. Revise course number:

- 3.1 Current course number: GEOG 464
- 3.2 Proposed course number: GEOG 364
- 3.3 Rationale for revision of course number: The Department is re-sequencing upper-division courses to fit the level at which students should be taking them. Regional courses are best taken at the junior level, thus the proposed 300-level designation.

3. Revise course prerequisites/corequisites/special requirements:

- 4.1 Current prerequisites: None
- 4.2 Proposed prerequisites: GEOG 110
- 4.3 Rationale for revision of course prerequisites: GEOG 110 is the required introductory cultural geography course for the program, it meets general education requirements, and it provides a logical foundation for more advanced regional geography coursework.
- 4.4 Effect on completion of major/minor sequence: None, as GEOG 110 is already a required foundational course.

4. Proposed term for implementation: 201430

9. Dates of prior committee approvals:

Department of Geography and Geology	8/21/2013
Ogden College Curriculum Committee	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Proposal Date: August 29, 2013

**Ogden College of Science and Engineering
Department of Geography and Geology
Proposal to Revise Course Credit Hours
(Action Item)**

Contact Person: Kevin Cary, kevin.cary@wku.edu, 745-4555

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: GEOG 391
- 1.2 Course title: Spatial Data Analysis and Interpretation
- 1.3 Credit hours: 3

2. Proposed course credit hours: 4

3. Rationale for the revision of course credit hours: Changing to 4 credit hours will reflect the work load currently required of students in the course. Spatial Data Analysis draws from large data sets in the geosciences and the field generally has seen annual advances in the base software products. While the course outline remains the same from year-to-year, the increasing capabilities and complexity of the software and the datasets mean that, in recent years, more lab time has been required of students to achieve mastery of spatial data analysis skills.

4. Proposed term for implementation: Fall 2014

5. Dates of prior committee approvals:

Department of Geography and Geology	<u>8/21/2013</u>
Ogden College Curriculum Committee	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Course Inventory Form

Proposal Date: February 6, 2013

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

Contact Person: Greg Goodrich, gregory.goodrich@wku.edu, 5-5986

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: GEOG 226
- 1.2 Course title: Our Dangerous Planet
- 1.3 Abbreviated course title: Our Dangerous Planet
- 1.4 Credit hours and contact hours: 3
- 1.5 Type of course: L – Lecture
- 1.6 Prerequisites: None
- 1.7 Course catalog listing: Introduction to how normal Earth processes concentrate their energies to create devastating impacts to humans and the built environment, with emphasis on survival techniques.

2. Rationale:

- 2.1 Reason for developing the proposed course: The Department of Geography and Geology has previously offered several bi-term courses focused on individual natural hazards and disasters (GEOG 204, 205, 207, 208, 209). The new GEOG 226 – Our Dangerous Planet would cover all tectonic, oceanic, and atmospheric natural hazards and disasters and would emphasize the spatial dimensions of risk for each hazard as well as survival techniques. This course will be proposed to the Colonnade Program under the Connections – Systems category.
- 2.2 Projected enrollment in the proposed course: At other universities where natural hazards courses are offered enrollment is generally very robust, with some schools having as many as 5,000 students per year. We expect 50-100 students per semester it is offered.
- 2.3 Relationship of the proposed course to courses now offered by the department: The individual hazard bi-term courses that were previously offered will be deleted to make way for this new course that will summarize all Earth natural hazards and disasters.
- 2.4 Relationship of the proposed course to courses offered in other departments: No other department at WKU offers a natural hazards course.
- 2.5 Relationship of the proposed course to courses offered in other institutions: Numerous other universities offer general education courses focused on natural hazards and disasters, including Tulane University (EENS 3050), San Diego State University (GEOL 303), and Baylor University (GEO 1401).

3. Discussion of proposed course:

- 3.1 Course objectives: Students in GEOG 226 – Our Dangerous Planet will understand the physical processes behind and the spatial dimension of Earth’s natural hazards and disasters with a special emphasis on surviving them. These disasters include tectonic, oceanic, and atmospheric hazards. The semester will conclude with a discussion of how climate change may affect the risk and severity of some of these hazards.
- 3.2 Content outline: Each week the focus will be on a different natural hazard.
- Tornado
 - Hurricane
 - Avalanche/snow/ice/cold
 - Drought/heat wave
 - Volcano
 - Earthquake
 - Landslide
 - Flood
 - Lightning
 - Tsunami
 - Forest Fire
 - Paleodisaster
 - Climate Change
- 3.3 Student expectations and requirements: Grades will be determined by mid-term exams and a final exam based on textbook readings and class discussions, homework assignments and in-class projects, and quizzes. Students will also create a research project based on one of the hazards covered in the semester.
- 3.4 Tentative texts and course materials:

*Abbott, P. L., 2013: *Natural Disasters*, 9th ed., McGraw Hill, 512 pp.

*Hyndman, D. and Hyndman, D., 2013: *Natural Hazards and Disasters*, 4th ed., Brooks Cole, 576 pp.

*Keller, E. A., and DeVecchio, D. E., 2011: *Natural Hazards*, 3rd ed., Prentice Hall, 528 pp.

4. Resources:

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

5. Budget implications:

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

6. Proposed term for implementation: Fall 2014

7. Dates of prior committee approvals:

Department of Geography and Geology: 8/21/2013

Ogden Curriculum Committee _____

General Education Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

Attachment: Bibliography, Library Resources Form, Course Inventory Form

Bibliography for GEOG 226 – Our Dangerous Planet

Essential Library Materials:

*Abbott, P. L., 2013: *Natural Disasters*, 9th ed., McGraw Hill, 512 pp.

*Hyndman, D. and Hyndman, D., 2013: *Natural Hazards and Disasters*, 4th ed., Brooks Cole, 576 pp.

*Keller, E. A., and DeVecchio, D. E., 2011: *Natural Hazards*, 3rd ed., Prentice Hall, 528 pp.

Journals:

Journal of Climate

Monthly Weather Review

Climate Research

Geology

Journal of Geology

Journal of Geology and Geophysics

Environmental Geology

Natural Hazards

Natural Hazards and Earth System Sciences

Bulletin of the American Meteorological Society

Weather and Forecasting

Supplementary Library Materials:

Bryant, E., 2005: *Natural Hazards*, Cambridge University Press, 328 pp.

Tierney, K. J., Lindell, M. K., and Perry, R. W., 2001: *Facing the Unexpected: Disaster Preparedness and Response in the United States*, Joseph Henry Press, 320 pp.

Mason, I., McGuire, B., and Kilburn, C., 2002: *Natural Hazards and Environmental Change*, Routledge, 200 pp.

Tobin, G. A., and Montz, B. E., 1997: *Natural Hazards: Explanation and Integration*, The Guilford Press, 388 pp.

* - Not currently in library holdings

Proposal Date: February 6, 2013

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

Contact Person: Greg Goodrich, gregory.goodrich@wku.edu, 5-5986

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: GEOG 227
- 1.2 Course title: Our Vulnerable Planet
- 1.3 Abbreviated course title: Our Vulnerable Planet
- 1.4 Credit hours: 3
- 1.5 Type of course: L - Lecture
- 1.6 Prerequisites: None
- 1.7 Course catalog listing: Explore how anthropogenic processes such as climate change, pollution, urban sprawl, deforestation, and desertification impact the people on Earth and its ecosystems.

2. Rationale:

- 2.1 Reason for developing the proposed course: GEOG 227 – Our Vulnerable Planet is being developed as a companion course to the newly proposed GEOG 226 – Our Dangerous Planet. Where the theme of GEOG 226 is “How the Earth can kill humans”, the theme of GEOG 227 is “How humans are killing the Earth”. GEOG 227 would cover the physical processes behind various anthropogenic hazards and would emphasize the spatial dimensions of risk for each hazard. Contemporary and predicted future global change will be placed into context with how humans have responded to past global change. This course will be proposed to the Colonnade Program under the Connections – Systems category.
- 2.2 Projected enrollment in the proposed course: Enrollment is predicted at 30-50 students per semester.
- 2.3 Relationship of the proposed course to courses now offered by the department: The Department of Geography and Geology offers GEOG 455 – Global Environmental Change, which focuses on contemporary issues of environmental change at the global level with an emphasis on policy formation, implementation, and assessment. GEOG 455 is an upper-division course geared towards departmental majors and graduate students. GEOG 227 would be geared towards non-major students and will be proposed as part of the new Colonnade Program – Connections category under Systems.
- 2.4 Relationship of the proposed course to courses offered in other departments: ENV 280 – Environmental Science is offered by the Department of Public Health. ENV 280 provides a general understanding of the application of science to the solution of contemporary environmental problems. GEOG 227 will examine the spatial dimensions of anthropogenic environmental issues from a hazards perspective with an emphasis on the implications of expected future change.

- 2.5 Relationship of the proposed course to courses offered in other institutions: Many universities offer similar courses to GEOG 227, including Arizona State University (GPH 314), Harvard (PH 278), and Portland State University (UNST 232).

3. Discussion of proposed course:

- 3.1 Course objectives: Students in GEOG 227 – Our Vulnerable Planet will understand the physical processes behind and the spatial dimension of anthropogenic hazards with a special emphasis on how the hazards affect the seven billion people on earth and the ecosystems that support them. The semester will conclude with a discussion of how predicted global change may affect the risk and severity of some of these hazards in the future.
- 3.2 Content outline: Each week the focus will be on a different anthropogenic hazard.
- Globalization
 - Paleodisasters
 - Population growth/urban sprawl
 - Energy resources/biofuels
 - Climate change
 - Future climate change
 - Urban heat island
 - Air pollution/ozone/acid rain
 - Drought/desertification/forest fires
 - Water resources
 - Agriculture/pollution/biogenetics
 - Deforestation/biodiversity
 - Exotic species
- 3.3 Student expectations and requirements: Student expectations and requirements: Grades will be determined by mid-term exams and a final exam based on textbook readings and class discussions, homework assignments and in-class projects, and quizzes. Students will also create a research project based on one of the anthropogenic hazards covered in the semester.
- 3.4 Tentative texts and course materials:
Botkin, D. B. and Keller, E. A., 2010: *Environmental Science: Earth as a Living Planet*. Wiley, 656 pp.

*Easton, T., 2012: *Taking Sides: Clashing Views on Environmental Issues*. McGraw-Hill/Dushkin, 448 pp.

Hernan, R. E., 2010: *This Borrowed Earth: Lessons from the Fifteen Worst Environmental Disasters around the World*. Palgrave McMillan, 256 pp.

*Raven, P. H., Hassenzuhl, D. M., and Berg, L. R., 2011: *Environment, 8th ed.* Wiley, 592 pp.

*Turekian, K. K., 1996: *Global Environmental Change: Past, Present, and Future*. Prentice Hall, 200 pp.

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 will teach this course
- 5.2 Special equipment needed: None
- 5.3 Expendable materials needed: None
- 5.4 Laboratory materials needed: None

6. Proposed term for implementation: Fall 2014

7. Dates of prior committee approvals:

Department of Geography and Geology:	<u>8/21/2013</u>
Ogden Curriculum Committee	_____
General Education Committee	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Attachment: Bibliography, Library Resources Form, Course Inventory Form

Bibliography for GEOG 227 – Our Vulnerable Planet

Essential Library Materials:

Botkin, D. B. and Keller, E. A., 2010: *Environmental Science: Earth as a Living Planet*. Wiley, 656 pp.

*Easton, T., 2012: *Taking Sides: Clashing Views on Environmental Issues*. McGraw-Hill/Dushkin, 448 pp.

Hernan, R. E., 2010: *This Borrowed Earth: Lessons from the Fifteen Worst Environmental Disasters around the World*. Palgrave MacMillan, 256 pp.

*Raven, P. H., Hassenzahl, D. M., and Berg, L. R., 2011: *Environment, 8th ed.* Wiley, 592 pp.

*Turekian, K. K., 1996: *Global Environmental Change: Past, Present, and Future*. Prentice Hall, 200 pp.

Journals:

Journal of Climate

Climate Research

Environmental Geology

Natural Hazards

Natural Hazards and Earth System Sciences

Environmental Science and Pollution Research

American Journal of Environmental Science

Global Change Biology

Mitigation and Adaptation Strategies for Global Change

Supplementary Library Materials:

*Mann, M. E. and Kump, L. R., 2008: *Dire Predictions: Understanding Global Warming*. DK Publishing, 208 pp.

*World Bank, 2010: *Natural Hazards, UnNatural Disasters: The Economics of Effective Prevention*. World Bank Publications, 276 pp.

Bryant, E., 2005: *Natural Hazards*, Cambridge University Press, 328 pp.

Tierney, K. J., Lindell, M. K., and Perry, R. W., 2001: *Facing the Unexpected: Disaster Preparedness and Response in the United States*, Joseph Henry Press, 320 pp.

Mason, I., McGuire, B., and Kilburn, C., 2002: *Natural Hazards and Environmental Change*, Routledge, 200 pp.

* - Not currently in library holdings