**Ogden College of Science and Engineering**

**Office of the Dean**

**745-4449**

**REPORT TO THE UNIVERSITY CURRICULUM COMMITTEE**

Date: March 9, 2011

The Ogden College of Science and Engineering submits the following action items for consideration:

1. New Business

|  |  |
| --- | --- |
| **Type of item** | **Description of Item & Contact Information** |
| Action | **Create a New Course**WTTI 201, Hydrology for Water OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 202, Drinking Water Sources, Quality & StandardsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 203, Introduction to Drinking Water TreatmentContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 204, Introduction to Wastewater TreatmentContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 205, Introduction to Drinking Water DistributionContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 206, Introduction to Wastewater CollectionContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 213, Basic Drinking Water Treatment ProcessesContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 214, Coagulation and Flocculation Processes in Water TreatmentContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 215, Sedimentation Basins and Clarifiers in Water TreatmentContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 216, Water Filtration ProcessesContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 217, Water Disinfection ProcessesContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 223, Basic Calculations for Water OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 224, Basic Hydraulics for Water OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 225, Basic Hydraulics in Drinking Water Distribution NetworksContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 227, Basic Hydraulic Concepts in Wastewater Collection SystemsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 232, Wastewater MicrobiologyContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 233, Natural Wastewater Treatment SystemsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 234, Basic Infrastructure for Water Distribution & WastewaterContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 235, Water Distribution System ComponentsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 236, Water Distribution System Operation and MaintenanceContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 237, Wastewater Collection System Asessment and RepairContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 238, Wastewater Collection Systems ManagementContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 239, Stormwater Management for OperatorsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 240, Motors, Engines, and Controls in Water OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 241, Introduction to Instrumentation & Control Systems in WaterContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 242, Basic Electricity for Water OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 243, Flowmeters, Sensors and Process MeasurementsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 244, Automatic Process Control for Water OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 249, Basic Water Chemistry for OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 250, Drinking Water Sampling and AnalysisContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 251, Wastewater Sampling and AnalysisContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 252, Water Operator SafetyContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 253, Wastewater RegulationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 254, Corrosion Control in Water OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 255, Ion Exchange Processes in Water TreatmentContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 256, Adsorption Processes in Water TreatmentContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 257, Aeration Processes in Water TreatmentContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 258, Membrane Processes in Water TreatmentContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 259, Introduction to Residuals Management in Water OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 260, Suspended Growth Systems in Wastewater OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 261, Attached Growth Systems in Wastewater OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 262, Nutrient Removal Processes in Water OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 263, Industrial Wastewater Pretreatment ProcessesContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 264, Wastewater Residuals ManagementContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 265, Recordkeeping and Reporting for Water OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**WTTI 266, Customer Service and Public Relations in Water OperationsContact: Jana Fattic, jana.fattic@wku.edu, x58706 |
| Action | **Create a New Course**AMS 395, Fundamentals of HACCPContact: John Khouryieh, hanna.khouryieh@wku.edu, 270-852-6407 |
| Action | **Create a New Course**MATH 370, Applied Techniques in MathematicsContact: Nezam Iraniparast, nezam.iraniparast@wku.edu, x56218 |
| Action | **Create a New Course**GEOG 459, Physical HydrologyContact: Chris Groves, chris.groves@wku.edu, x55974 |
| Action | **Create a New Course**GEOG 461, Karst EnvironmentsContact: Jason Polk, jason.polk@wku.edu, x55015 |
| Action | **Create a New Course**GEOG 489, Alternatives in SustainabilityContact: Daniel Reader, Daniel.reader@wku.edu, x52813 |
| Action | **Make Multiple Revisions to a Course**AMS 303, Food RegulationsContact: John Khouryieh, hanna.khouryieh@wku.edu, 270-852-6407 |
| Action | **Make Multiple Revisions to a Course**AMS 352, Food Processing IContact: John Khouryieh, hanna.khouryieh@wku.edu, 270-852-6407 |
| Action | **Make Multiple Revisions to a Course**AMS 381, Food Manufacturing Quality and SafetyContact: John Khouryieh, hanna.khouryieh@wku.edu, 270-852-6407 |
| Action | **Make Multiple Revisions to a Course**AMS 443, Food PackagingContact: John Khouryieh, hanna.khouryieh@wku.edu, 270-852-6407 |
| Action | **Make Multiple Revisions to a Course**AMS 462, Food Processing IIContact: John Khouryieh, hanna.khouryieh@wku.edu, 270-852-6407 |
| Action | **Make Multiple Revisions to a Course**GEOG 419, GIS Applications DevelopmentContact: Jun Yan, jun.yan@wku.edu, x55982 |
| Action | **Make Multiple Revisions to a Course**MATH 431, Intermediate Analysis IContact: Mikhail Khenner, mikhail.khenner@wku.edu, x52797 Nezam Iraniparast, nezam.iraniparast@wku.edu, x56281 |
| Action | **Make Multiple Revisions to a Course**MATH 432, Intermediate Analysis IIContact: Mikhail Khenner, mikhail.khenner@wku.edu, x52797 Nezam Iraniparast, nezam.iraniparast@wku.edu, x56281 |
| Action | **Revise Course Credit Hours**MATH 498, Senior SeminarContact: Nezam Iraniparast, nezam.iraniparast@wku.edu, x56281 |
| Action | **Revise a Program**Ref. #506, Advanced ManufacturingContact: Bryan Reaka, bryan.reaka@wku.edu, x57032 |
| Action | **Revise a Program**Ref. #537, Electrical EngineeringContact: Mark Cambron, mark.cambron@wku.edu, x58868 |
| Action | **Revise a Program**Ref. #363, Environmental Studies MinorContact: David Keeling, david.keeling@wku.edu, x54555 |
| Action | **Revise a Program**Ref. #674, GeographyContact: Chris Groves, chris.groves@wku.edu, x55974 |
| Action | **Revise a Program**Ref. #728 and #528, Major in MathematicsContact: Nezam Iraniparast, nezam.iraniparast@wku.edu, x56281 |
| Action | **Revise a Program**Ref. #341, Minor in Computer ScienceContact: Zhonghang Xia, zhonghang.xia@wku.edu, x56459 |
| Action | **Create a New Program**Minor in Nutritional and Food ChemistryContact: Kevin Williams, kevin.williams@wku.edu, x58899 |
| Action | **Create a New Certificate Program**Certificate in Data Analysis using SASContact: Melanie Autin, melanie.autin@wku.edu, x56171 Jonathan Quiton, jonathan.quiton@wku.edu, x52441 |

Proposal Date: 1/27/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 201
	2. Course title: Hydrology for Water Operations
	3. Abbreviated course title: Hydrology for Water Operations
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: The properties, distribution, and circulation of water as it moves through the atmosphere, across and below the earth’s surface, with emphasis on water and wastewater operations. Topics include the hydrologic cycle, groundwater, rainfall, droughts, and volume and flow.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 200 – Water Supply and Wastewater Control.
	4. Relationship of the proposed course to courses offered in other departments: The department of Geography/Geology offers GEOL/GEOG 310, General Hydrology and the Department of Engineering offers CE 461, Hydrology. However, these courses are more advanced and not tailored toward water and wastewater operators.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Identify various sources of water; and
* Evaluate the impacts of the hydrologic cycle on water availability
	1. Content outline:
* The hydrologic cycle
* Groundwater
* Surface water
* Volume and flow
* Water use and availability
* Rainfall
* Droughts
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Basic Environmental Technology: Water Supply, Waste Management, & Pollution Control, Fifth Edition, Jerry A. Nathanson, 2007.
* WSO: Water Sources, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/26/2011

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 202
	2. Course title: Drinking Water Sources, Quality & Standards
	3. Abbreviated course title: Drink Water Qual & Standards
	4. Credit hours and contact hours: 0.75
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Examination of sources of drinking water, including identification of the various types and sources of contaminants in natural and artificial water systems, and standards used to establish drinking water quality.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 200 – Water Supply and Wastewater Control
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Identify various types of contaminants in both natural and artificial water systems; and
* Identify the standards used to define water quality
	1. Content outline:
* Water quality
* Water pollution
* Groundwater sources
* Surface water sources
* Public water supply regulations
* Microbiological contaminants
* Inorganic chemicals
* Organic contaminants
* Radiological contaminants
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Basic Environmental Technology: Water Supply, Waste Management, & Pollution Control, Fifth Edition, Jerry A. Nathanson, 2007.
* Principles and Practices of Water Supply Operations: Water Sources, Fourth Edition, American Water Works Association, 2010.
* Principles and Practices of Water Supply Operations: Water Quality, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/26/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 203
	2. Course title: Introduction to Drinking Water Treatment
	3. Abbreviated course title: Intro Drink Water Treatment
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Introduction to the processes and equipment used to create safe drinking water, including treatment at the source, preliminary treatment, and purification.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 200 – Water Supply and Wastewater Control
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of water treatment systems; and
* Identify the equipment and processes used in creating safe drinking water.
	1. Content outline:
* Water treatment processes
* Treatment of water at the source
* Preliminary treatment
* Drinking water purification
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Basic Environmental Technology: Water Supply, Waste Management, & Pollution Control, Fifth Edition, Jerry A. Nathanson, 2007.
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.
* Water & Wastewater Treatment: A Guide for the Non-Engineering Professional, American Water Works Association, Joanne E. Drinan, 2001.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/27/2011

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 204
	2. Course title: Introduction to Wastewater Treatment
	3. Abbreviated course title: Intro Wastewater Treatment
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Introduction to the equipment, structures, and processes used in the treatment of wastewater. Examines various legislation and regulations pertaining to wastewater treatment and effluent standards.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 200 – Water Supply and Wastewater Control
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Identify the types of wastewater treatment; and
* Identify the equipment and structures used in wastewater treatment.
	1. Content outline:
* Legislation and standards
* Preliminary and primary treatment
* Secondary (biological) treatment
* Tertiary (advanced) treatment
* On-Site (decentralized) wastewater treatment and disposal
* Sludge (biosolids) management
* Operation and maintenance
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Basic Environmental Technology: Water Supply, Waste Management, & Pollution Control, Fifth Edition, Jerry A. Nathanson, 2007.
* Operation of Wastewater Treatment Plants, Volume I, Seventh Edition, California State University, Sacramento, 2008.
* Water & Wastewater Treatment: A Guide for the Non-Engineering Professional, American Water Works Association, Joanne E. Drinan, 2001.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/27/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 205
	2. Course title: Introduction to Drinking Water Distribution
	3. Abbreviated course title: Intro Drink Water Distribution
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Introduction to the equipment and structures used in drinking water transmission and distribution systems. Topics include system design and maintenance, the use of centrifugal pumps and water mains, and computer applications.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 200 – Water Supply & Wastewater Control.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of water distribution systems;
* Identify the equipment and structures used in drinking water transmission and distribution systems; and
* Recognize the design factors involved in planning a water distribution system.
	1. Content outline:
* System purpose and planning
* Design factors
* Water mains
* Centrifugal pumps
* Distribution storage
* Flow in pipe networks
* Computer applications
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Basic Environmental Technology: Water Supply, Waste Management, & Pollution Control, Fifth Edition, Jerry A. Nathanson, 2007.
* Principles and Practices of Water Supply Operations: Water Transmission and Distribution, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/27/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 206
	2. Course title: Introduction to Wastewater Collection
	3. Abbreviated course title: Intro Wastewater Collection
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Introduction to the equipment, structures, and design of wastewater collection systems. Topics include the layout and construction of sanitary sewers, lift stations, infiltration and inflow, and treatment methods.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 200 – Water Supply & Wastewater Control.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of wastewater collection systems;
* Identify the equipment and structures used in wastewater collection systems; and
* Recognize the design factors involved in planning a wastewater collection system.
	1. Content outline:
* Sanitary sewer design
* Sewage lift stations
* Sewer construction
* Infiltration and inflow
* Sewer rehabilitation
* Alternative wastewater collection systems
* Computer applications and geographic information systems
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Basic Environmental Technology: Water Supply, Waste Management, & Pollution Control, Fifth Edition, Jerry A. Nathanson, 2007.
* Operation and Maintenance of Wastewater Collection Systems, Volume I, Sixth Edition, California State University, Sacramento, 2003.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/27/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 213
	2. Course title: Basic Drinking Water Treatment Processes
	3. Abbreviated course title: Basic Water Treatment Process
	4. Credit hours and contact hours: 0.75
	5. Type of course: Lecture
	6. Prerequisite: WTTI 203
	7. Course catalog listing: The effects of characteristics of water that hinder quality and treatment techniques which improve water quality. Topics include fluoridation, and the treatment and control of iron, manganese, and hard water.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 210 – Introduction to Water Treatment
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the use of the fluoridation process;
* Understand the use of iron and manganese control processes;
* Understand the effects of iron and manganese in water;
* Understand the use of the softening process; and
* Understand the effects of hard water.
	1. Content outline:
* Fluoridation process description
* Fluoridation facilities
* Fluoridation regulations
* Operation of the fluoridation process
* Fluoridation operating problems
* Fluoridation control tests
* Fluoridation safety precautions
* Fluoridation record keeping
* Excessive iron and manganese
* Iron and manganese control processes
* Iron and manganese control facilities
* Iron and manganese regulations
* Iron and manganese control process operation
* Iron and manganese record keeping
* Operation of the lime-soda ash process
* Effects of hard and soft water
* Softening processes
* Softening facilities
* Softening regulations
* Softening safety precautions
* Softening record keeping
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/27/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 214
	2. Course title: Coagulation and Flocculation Processes in Water Treatment
	3. Abbreviated course title: Coagltn & Flocltn in Wtr Treat
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites: WTTI 203 or WTTI 204
	7. Course catalog listing: Examination of the processes that remove suspended solids from drinking water and wastewater. Topics include chemicals used, rapid-mix facilities, flocculation facilities, regulations, dosage control, safety precautions, and record keeping.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces portions of WTTI 210 – Introduction to Water Treatment and WTTI 211 – Introduction to Wastewater Treatment.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Identify the steps associated with the coagulation and flocculation processes;
* Identify the types of facilities utilized for coagulation and flocculation processes; and
* Recognize the chemicals used for coagulation and flocculation
	1. Content outline:
* Process description
* Coagulant chemicals and feed equipment
* Chemical purchasing, receiving, and quality control
* Rapid-mix facilities
* Flocculation facilities
* Regulations
* Operation of the processes
* Dosage control
* Safety precautions
* Record keeping
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Water Treatment Plant Operation, Vol. 1, Sixth Edition, California State University, Sacramento, 2008.
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/27/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 215
	2. Course title: Sedimentation Basins and Clarifiers in Water Treatment
	3. Abbreviated course title: Sediment Basins & Clarifiers
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites: WTTI 203 or WTTI 204
	7. Course catalog listing: Course outlining the use sedimentation processes in water treatment. Topics include equipment and structures utilized in the process, operation, other clarification processes, and record keeping.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces portions of WTTI 210 – Introduction to Water Treatment and WTTI 211 – Introduction to Wastewater Management
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand why sedimentation basins and clarifiers are used;
* Comprehend the process of sedimentation; and
* Understand the process of operating a sedimentation basin or other clarifier.
	1. Content outline:
* Sedimentation basins and clarifiers process
* Sedimentation facilities
* Other clarification processes
* Sedimentation basin and clarifier regulations
* Operating sedimentation basins and clarifiers
* Record keeping
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Water Treatment Plant Operation, Vol. 1, Sixth Edition, California State University, Sacramento, 2008.
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/27/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 216
	2. Course title: Water Filtration Processes
	3. Abbreviated course title: Water Filtration Processes
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites: WTTI 203 or WTTI 204
	7. Course catalog listing: Equipment, structures, and operational factors used in filtration systems for water and wastewater treatment facilities. Topics include approaches to filtration, gravity filters, pressure filtration, regulations, safety precautions, and record keeping.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces portions of WTTI 210 – Introduction to Water Treatment and WTTI 211 – Introduction to Wastewater Treatment.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the filtration process;
* Understand the process of gravity filtration; and
* Understand the process of pressure filtration.
	1. Content outline:
* The filtration process
* Approaches to filtration
* Types of gravity filters
* Equipment associated with gravity filters
* Filter control equipment
* Operation of gravity filters
* Pressure filtration
* Filtration regulations
* Filtration safety precautions
* Filtration record keeping
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Water Treatment Plant Operation, Vol. 1, Sixth Edition, California State University, Sacramento, 2008.
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/27/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 217
	2. Course title: Water Disinfection Processes
	3. Abbreviated course title: Water Disinfection Processes
	4. Credit hours and contact hours: 1
	5. Type of course: Lecture
	6. Prerequisites: WTTI 203 or WTTI 204
	7. Course catalog listing: Equipment, structures, and processes used during the disinfection process in water and wastewater treatment. Topics include chlorination processes, other oxidant processes, disinfection regulations, control tests, safety precautions, and record keeping.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces portions of WTTI 210 – Introduction to Water Treatment and WTTI 211 – Introduction to Wastewater Treatment.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the reasons for disinfection;
* Discuss several disinfection methods; and
* Properly utilize several disinfection methods.
	1. Content outline:
* Destroying pathogens in water
* Gas chlorination facilities
* Hypochlorination facilities
* Facilities for other xxidants
* Disinfection regulations
* Operation of the chlorination process
* Chlorination operating problems
* Disinfection control tests
* Disinfection safety precautions
* Disinfection record keeping
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Water Treatment Plant Operation, Vol. I, Sixth Edition, California State University, Sacramento, 2008.
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 223
	2. Course title: Basic Calculations for Water Operations
	3. Abbreviated course title: Basic Calculations Water Ops
	4. Credit hours and contact hours: 1.25
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Introduction to calculations used by operators to determine load, demand, and other quantities critical to water and wastewater operations. Topics include per capita water use, domestic water use based on household fixture rates, water use per unit of industrial product produced, demand analysis, and load estimation.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces portions of WTTI 220 – Calculations and Hydraulics for Water and WTTI 221 – Calculations and Hydraulics for Wastewater
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Utilize various calculation techniques to estimate load and demand;
* Understand mathematical concepts; and
* Recognize the importance of calculation to the water and wastewater industry.
	1. Content outline:
* Powers and scientific notation
* Per capita water use
* Domestic water use based on household fixture rates
* Water use per unit of industrial product produced
* Demand analysis
* Load estimation
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Basic Science Concepts and Applications, Fourth Edition, American Water Works Association, 2010.
* Principles and Practices of Water Supply Operations: Basic Science Concepts and Applications Workbook, Fourth Edition, American Water Works Association, 2010.
* Essential Water and Wastewater Calculations for Engineers and Operators, First Edition, MWH Soft, John W. Nicklow and Paul F. Boulos, 2007.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_3*/*3/11\_\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 224
	2. Course title: Basic Hydraulics for Water Operations
	3. Abbreviated course title: Basic Hydraulics Water Ops
	4. Credit hours and contact hours: 1
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Basic hydraulic concepts and calculations necessary for operating water and wastewater systems. Topics include basic properties of fluids, pressure and force, head and head loss, pumping calculations, flow, thrust control, and computer applications.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces portions of WTTI 220 – Calculations and Hydraulics for Water and WTTI 221 –Calculations and Hydraulics for Wastewater.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand various mathematical hydraulic concepts; and
* Apply various mathematical hydraulic concepts.
	1. Content outline:
* Density and specific gravity
* Pressure and force
* Piezometric surface and hydraulic grade line
* Head
* Head loss
* Pumping problems
* Flow rate problems
* Thrust control
* Fluid properties
* Flow
* Flow in pipes under pressure
* Gravity flow in pipes
* Nonuniform open channel flow
* Computer applications in hydraulics
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Basic Environmental Technology: Water Supply, Waste Management, & Pollution Control, Fifth Edition, Jerry A. Nathanson, 2007.
* Principles and Practices of Water Supply Operations: Basic Science Concepts and Applications, Fourth Edition, American Water Works Association, 2010.
* Essential Water and Wastewater Calculations, First Edition, MWH Soft, John W. Nicklow and Paul F. Boulos, 2007.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 225
	2. Course title: Basic Hydraulics in Drinking Water Distribution Networks
	3. Abbreviated course title: Hydraulics in Water Distrib
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites: WTTI 223 and WTTI 224
	7. Course catalog listing: Basic hydraulic concepts driving the planning, design, construction, and operation of a pressurized network.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 220 – Calculations & Hydraulics for Water
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of pressurized flow in water distribution systems;
* Identify the equipment and structures used in pressurized flow networks; and
* Recognize the design factors involved in planning a pressurized network.
	1. Content outline:
* Hydraulics of pipe flow
* Hydraulics of the system
* Network analysis
* Hydraulic transients: water hammer
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Transmission and Distribution, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 227
	2. Course title: Basic Hydraulic Concepts in Wastewater Collection Systems
	3. Abbreviated course title: Basic Hydraulics in Wastewater
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites: WTTI 223 and WTTI 224
	7. Course catalog listing: Basic hydraulic concepts driving the planning, design, construction, and operation of wastewater collection systems. Topics include the function and operation of open channel and gravity flow collection system networks.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 221 – Calculations and Hydraulics for Wastewater
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand various hydraulic concepts that deal with open channels and gravity flow systems; and
* Apply various hydraulic concepts to open channels and gravity flow systems.
	1. Content outline:
* Specific energy
* Critical flow
* Flow transitions
* Resistance to flow
* Uniform flow
* Gradually-varied flow
* Form losses
* Hydraulic jump
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Essential Water and Wastewater Calculations for Engineers and Operators, First Edition, MWH Soft, John W. Nicklow and Paul F. Boulos, 2007.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/27/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 232
	2. Course title: Wastewater Microbiology
	3. Abbreviated course title: Wastewater Microbiology
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 204
	7. Course catalog listing: Bacteria and other microscopic organisms in wastewater, the equipment and structures used to grow or remove microorganisms, and the role microorganisms play in the breakdown of waste material.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 211 – Introduction to Wastewater Treatment
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Identify the different types of microorganisms present in wastewater;
* Identify the equipment and structures used to eliminate microorganisms; and
* Understand the role microorganisms play in the breakdown of waste material.
	1. Content outline:
* Types of microorganisms
* Uses of microorganisms
* Anatomy of microorganisms
* Eliminating microorganisms
* Growing microorganisms
* Breakdown of waste organic matter
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Wastewater Microbiology: A Handbook for Operators, American Water Works Association, Toni Glymph, 2005.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 233
	2. Course title: Natural Wastewater Treatment Systems
	3. Abbreviated course title: Natural Wastewater Treatment
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 204
	7. Course catalog listing: Examination of the equipment, structures, and operating factors in natural wastewater treatment systems.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 211 – Introduction to Wastewater Treatment
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand different types of natural wastewater treatment systems;
* Understand the processes used to create and maintain wastewater treatment systems; and
* Demonstrate which natural treatment functions best in specific environments.
	1. Content outline:
* Site and soil assessment requirements
* Subsurface wastewater infiltration
* Slow-rate land treatment systems
* Rapid infiltration land treatment system
* Overland-flow land treatment systems
* Wastewater stabilization ponds
* Floating aquatic plant treatment systems
* Constructed wetland systems
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Natural Systems for Wastewater Treatment, MOP FD-16, 3rd Ed., Water Environment Federation, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 234
	2. Course title: Basic Infrastructure for Water Distribution & Wastewater Collection Systems
	3. Abbreviated course title: Infrastr Water Dist & Collect
	4. Credit hours and contact hours: 1
	5. Type of course: Lecture
	6. Prerequisites: WTTI 205 or WTTI 206
	7. Course catalog listing: Basic components of drinking water distribution systems and wastewater collection systems, including equipment, structures, and operating factors affecting the planning, design, and construction.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 212 – Water Distribution & Wastewater Collection.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of water distribution and wastewater collection systems;
* Identify the equipment and structures used in drinking water distribution and wastewater collection systems; and
* Recognize the design factors involved in planning a water distribution or wastewater collection system.
	1. Content outline:
* System layoff
* Sizing mains
* Material selection
* Types of pipe materials
* Water storage requirements
* Types of treated-water storage facilities
* Location of distribution storage
* Water storage facility equipment
* Operation and maintenance of water storage facilities
* Water storage facility safety
* Pump stations
* Types of pumps
* Operation and maintenance of centrifugal pumps
* Record keeping
* Pump safety
* Classification and uses of water utility valves
* Valve operation and storage
* Valve joints, boxes, and vaults
* Valve records
* Wastewater and stormwater pumps, pipes, valves, and controls
* Stormwater pumping stations
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Transmission and Distribution, Fourth Edition, American Water Works Association, 2010.
* Design of Wastewater and Stormwater Pumping Stations – MOP FD-4, Water Environment Federation, 1993.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 235
	2. Course title: Water Distribution System Components
	3. Abbreviated course title: Water Distrib Sys Components
	4. Credit hours and contact hours: 0.75
	5. Type of course: Lecture
	6. Prerequisite: WTTI 205
	7. Course catalog listing: Introduction to the components used in drinking water distribution systems and the factors involved in planning, operating, and maintaining them. Topics include hydrants, meters, cross-connections, backflow control methods and devices, and records and reporting.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 212 – Water Distribution & Wastewater Collection.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of hydrants, meters, and cross-connections;
* Identify the components of hydrants, meters, and cross-connections; and
* Recognize the design factors involved in planning for installation or maintenance of hydrants, meters, or cross-connections.
	1. Content outline:
* Fire hydrant uses
* Systems problems caused by hydrant operation
* Types of fire hydrants
* Hydrant parts
* Inspection and installation
* Operation and maintenance
* Hydrant records
* Hydrant safety
* Customer water meters
* Customer meter installation
* Meter reading
* Meter testing, maintenance, and repair
* Mainline metering
* Metering safety
* Cross-connections and locations
* Types of cross-connections
* Public health significance of cross-connections
* Backflow control methods and devices
* Cross-connection control programs
* Records and reports for cross-connections
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Transmission and Distribution, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inven**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 236
	2. Course title: Water Distribution System Operation and Maintenance
	3. Abbreviated course title: Water Distrib Sys Oper & Maint
	4. Credit hours and contact hours: 1.25
	5. Type of course: Lecture
	6. Prerequisite: WTTI 205
	7. Course catalog listing: Examination of the procedures used in the operation and maintenance of water distribution networks. Topics include pipe shipment and handling, excavation, laying pipe, pressure and leak testing, flushing and disinfection, inspections, site restoration, water main installation, maintaining water quality, maintaining flow and pressure, meter locations, service lines, and thawing.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 212 – Water Distribution & Wastewater Collection.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the different types of operation and maintenance;
* Identify the consequences of not properly performing operation or maintenance; and
* Recognize the factors which contribute to system degradation.
	1. Content outline:
* Pipe shipment
* Pipe handling
* Excavation
* Laying pipe
* Backfilling
* Pressure and leak testing
* Flushing and disinfection
* Final inspection
* Site restoration
* Water main installation safety
* Maintaining water quality
* Maintaining flow and pressure
* Meter locations
* Service line sizes, materials, and equipment
* Water service taps
* Leaks and breaks
* Thawing
* Service line responsibility
* Service line records
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Transmission and Distribution, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 237
	2. Course title: Wastewater Collection System Assessment and Repair
	3. Abbreviated course title: Wastewater Sys Assess & Rep
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 206
	7. Course catalog listing: Procedures used in the operation and maintenance of wastewater collection systems. Topics include operation and maintenance, inspecting and testing components, pipeline and manhole cleaning and inspection methods, and underground repair.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 212 – Water Distribution & Wastewater Collection.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the methods of maintaining collection systems;
* Identify the processes used in maintaining collection systems; and
* Recognize when maintenance must be performed on a wastewater collection system.
	1. Content outline:
* Collection system operation and maintenance
* Inspecting and testing collection systems
* Pipeline cleaning and inspection methods
* Underground repair
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Operation and Maintenance of Wastewater Collection Systems, Volume I, Sixth Edition, California State University, Sacramento, 2003.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 238
	2. Course title: Wastewater Collection Systems Management
	3. Abbreviated course title: Wastewater Collect System Mgmt
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 206
	7. Course catalog listing: Management concepts and considerations in the wastewater industry. Topics include operation and maintenance, information management, system design, construction, and assessment, public policy and community relations, budgeting and financial planning, and safety and security.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 212 – Water Distribution & Wastewater Collection.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Identify the main wastewater managerial techniques;
* Identify the administrative duties that are required for wastewater managers; and
* Recognize the factors involved in planning a wastewater operations.
	1. Content outline:
* System operations and maintenance
* Information management
* Collection system assessment and capital improvement planning
* System design considerations
* Construction contracting
* Public policy and community relations
* Budgeting and financial planning
* Safety, standard procedures, training, and certifications
* Emergency preparedness and security
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Operation and Maintenance of Wastewater Collection Systems: Volume I, Sixth Edition, California State University, Sacramento, 2003.
* Wastewater Collection Systems Management, MOP 7, Sixth Edition, Water Environment Federation, 2009.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 239
	2. Course title: Stormwater Management for Operators
	3. Abbreviated course title: Stormwater Mgmt for Operators
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 206
	7. Course catalog listing: Control and mitigation of stormwater runoff via wastewater treatment facilities. Topics include estimating stormwater runoff, storm sewer systems, best management practices, floodplains, control of combined sewer overflows, controlling constituent discharges, and computer applications.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 212 – Water Distribution & Wastewater Collection.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of stormwater management;
* Identify the equipment and structures used in stormwater management; and
* Recognize the design factors involved in planning for stormwater runoff.
	1. Content outline:
* Estimating storm runoff
* Storm sewer systems
* Best management practices
* Floodplains
* Control of combined sewer overflow
* Controlling constituent discharges
* Computer applications
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Basic Environmental Technology: Water Supply, Waste Management, & Pollution Control, Fifth Edition, Jerry A. Nathanson, 2007.
* Urban Runoff Quality Management-MOP 23, Water Environment Federation, 1998.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 240
	2. Course title: Motors, Engines, and Controls in Water Operations
	3. Abbreviated course title: Motors & Engines in Water Ops
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Investigation of motors, engines, and controls used in water and wastewater treatment operations. Topics include electric motors, combustion engines, electrically driven pumps, motor and engine records, and motor and engine safety.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 222 – Water and Wastewater Instrumentation and Control
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of engines in water treatment;
* Identify ways to repair and maintain engines and associated equipment; and
* Identify the main differences between electrical and internal combustion engines.
	1. Content outline:
* Principles of electric motor operation
* Single-phase and three-phase motors
* Electric motor construction
* Motor control equipment
* Improving the efficiency of electrically driven pumps
* Maintenance of electric motors
* Types of combustion engines
* Operation and maintenance of internal-combustion engines
* Motor and engine records
* Motor and engine safety
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* M2 Instrumentation and Control, 3rd Edition, American Water Works Association, 2001.
* Principles and Practices of Water Supply Operations: Water Transmission and Distribution, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/28/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 240
	2. Course title: Motors, Engines, and Controls in Water Operations
	3. Abbreviated course title: Motors & Engines in Water Ops
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Investigation of motors, engines, and controls used in water and wastewater treatment operations. Topics include electric motors, combustion engines, electrically driven pumps, motor and engine records, and motor and engine safety.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 222 – Water and Wastewater Instrumentation and Control
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of engines in water treatment;
* Identify ways to repair and maintain engines and associated equipment; and
* Identify the main differences between electrical and internal combustion engines.
	1. Content outline:
* Principles of electric motor operation
* Single-phase and three-phase motors
* Electric motor construction
* Motor control equipment
* Improving the efficiency of electrically driven pumps
* Maintenance of electric motors
* Types of combustion engines
* Operation and maintenance of internal-combustion engines
* Motor and engine records
* Motor and engine safety
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* M2 Instrumentation and Control, 3rd Edition, American Water Works Association, 2001.
* Principles and Practices of Water Supply Operations: Water Transmission and Distribution, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 241
	2. Course title: Introduction to Instrumentation & Control Systems in Water Operations
	3. Abbreviated course title: Instrument & Control in Water
	4. Credit hours and contact hours: 0.75
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Introduction to the instrumentation and control systems used in water and wastewater operations. Topics include instrumentation, telemetry, control systems, Supervisory Control and Data Acquisition (SCADA) system components, operation and maintenance, flow, pressure, and level measurement, and automation.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 222 – Water & Wastewater Instrumentation & Control
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Identify the different types of instrumentation;
* Identify the equipment and structures used in instrumentation and control; and
* Recognize the design factors involved in creating and maintaining a instrumentation system for water and wastewater operations.
	1. Content outline:
* Primary instrumentation
* Secondary instrumentation and telemetering
* Control systems
* Supervisory control and data acquisition
* SCADA system components
* Operation and maintenance
* Flow, pressure, and level measurement
* Automation
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Operation of Municipal Wastewater Treatment Plants, MOP 11, Sixth Edition, Water Environment Federation, 2007.
* M2 Instrumentation and Control, Third Edition, American Water Works Association, 2001.
* Principles and Practices of Water Supply Operations: Water Transmission and Distribution, Fourth Edition, American Water Works Association, 2010.
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 242
	2. Course title: Basic Electricity for Water Operations
	3. Abbreviated course title: Basic Electric for Water Ops
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Investigation of the basic concepts and applications of electricity in water and wastewater operations.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 222 – Water & Wastewater Instrumentation & Control.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the basic properties of electricity; and
* Recognize the terms and concepts associated with electricity as it pertains to water and wastewater.
	1. Content outline:
* Electricity, magnetism, and electrical measurements
* Electrical quantities and terms
* Functions and ratings of electrical equipment
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Basic Science Concepts and Applications, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 243
	2. Course title: Flowmeters, Sensors and Process Measurements
	3. Abbreviated course title: Flowmeters & Process Meas
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Investigation of the equipment and techniques used to measure flow and other process information in water and wastewater operations.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 222 – Water & Wastewater Instrumentation & Control.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of measuring various data;
* Identify the equipment and structures used in measuring various data; and
* Recognize the design factors involved in measuring data effectively in a water or wastewater treatment facility.
	1. Content outline:
* Meter categories
* Meter coefficient of discharge
* Venturi flowmeters
* Modified venturis
* Orifice Plate flowmeters
* Magnetic flowmeters
* Turbine and propeller flowmeters
* Sonic flowmeters
* Averaging pitot flowmeters
* Variable area flowmeters
* Open channel flow
* General installation precautions
* Signal output and transport
* Measuring pressure, level, and temperature
* Measuring electric power and equipment status
* Process analyzers
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* M2 Instrumentation and Control, Third Edition, American Water Works Association, 2001.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 244
	2. Course title: Automatic Process Control for Water Operations
	3. Abbreviated course title: Auto Process Control for Water
	4. Credit hours and contact hours: 0.75
	5. Type of course: Lecture
	6. Prerequisite: WTTI 243
	7. Course catalog listing: Analysis of the equipment and procedures used in the automated control processes in water or wastewater facilities.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 222 – Water & Wastewater Instrumentation & Control.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the applications of various automatic technologies;
* Identify the equipment and structures used in automated processes; and
* Recognize the design factors involved in creating and implementing automatic controls in a water or wastewater facility.
	1. Content outline:
* Valves
* Pumping systems
* Miscellaneous final control elements
* Feedforward control
* Feedback control
* Feedforward vs. feedback control
* Manual vs. automatic control
* Automatic feedforward control methods
* Automatic feedback control methods
* Digital control systems
* Communication systems
* Applications and site planning
* Technology trends
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* M2 Instrumentation and Control, Third Edition, American Water Works Association, 2001.
* Automation of Wastewater Treatment Facilities, MOP 21, 3rd Edition, Water Environment Federation, 2006.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 249
	2. Course title: Basic Water Chemistry for Operators
	3. Abbreviated course title: Basic Water Chem for Operators
	4. Credit hours and contact hours: 1
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Assessment of the essential chemical properties of water and how they can affect water quality.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 226 – Water Chemistry.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the main concepts of water chemistry;
* Identify the equipment used to diagnose water’s chemical properties; and
* Recognize the ways in which chemical problems can be addressed.
	1. Content outline:
* Acidity
* Alkalinity
* Calcium carbonate stability
* Coagulent effectiveness
* Color
* Conductivity
* Hardness
* Taste and odor
* Temperature
* Total dissolved solids
* Turbidity
* The structure of matter
* The classification of matter
* Valence, chemical formulas, and chemical equations
* Solutions
* Chemistry of treatment processes
* Chemical dosage
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Basic Chemistry for Water & Wastewater Operators, American Water Works Association, Darshan Singh Sarai, 2005.
* Principles and Practices of Water Supply Operations: Water Quality, Fourth Edition, American Water Works Association, 2010.
* Principles and Practices of Water Supply Operations: Basic Science Concepts and Applications, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 250
	2. Course title: Drinking Water Sampling and Analysis
	3. Abbreviated course title: Drink Water Samp & Analysis
	4. Credit hours and contact hours: 1
	5. Type of course: Lecture
	6. Prerequisite: WTTI 249
	7. Course catalog listing: Study of the techniques of sampling and laboratory testing of drinking water resources.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 226 – Water Chemistry
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes sampling and monitoring water resources;
* Identify the equipment and structures used in sampling and monitoring water resources; and
* Recognize the safety risks associated with sampling and testing water resources.
	1. Content outline:
* Sampling
* Monitoring for chemical contaminants
* Laboratory certification
* Record keeping and sample labeling
* Sample preservation, storage, and transportation
* Labware
* Major laboratory equipment
* Safety equipment
* Support equipment
* Analytical laboratory instruments
* Laboratory procedures
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Quality, Fourth Edition, American Water Works Association, 2010.
* Water Treatment Plant Operation, Volume I, Sixth Edition, California State University, Sacramento, 2008.
* Water Treatment Plant Operation, Volume II, Sixth Edition, California State University, Sacramento, 2006.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 251
	2. Course title: Wastewater Sampling and Analysis
	3. Abbreviated course title: Wastewater Sampling & Analysis
	4. Credit hours and contact hours: 1
	5. Type of course: Lecture
	6. Prerequisite: WTTI 249
	7. Course catalog listing: Investigation of the procedures for effectively sampling and analyzing wastewater. Topics include operating laboratory equipment, analyzing in accordance with NPDES permit requirements, and recording laboratory results.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 226 – Water Chemistry.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the procedures necessary for effective sampling and analyzing wastewater; and
* Identify the equipment and structures used in sampling and analyzing wastewater.
	1. Content outline:
* Working safely in a laboratory
* Operating laboratory equipment
* Collecting representative samples
* Preparing samples for analysis
* Plant control tests
* Analyzing in accordance with NPDES permit requirements
* Shortcomings of wastewater testing
* Recording laboratory results
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Operation of Municipal Wastewater Treatment Plants, MOP 11, Sixth Edition, Water Environment Federation, 2007.
* Operation of Wastewater Treatment Plants, Volume I, Seventh Edition, California State University, Sacramento, 2008.
* Operation of Wastewater Treatment Plants, Volume II, Seventh Edition, California State University, Sacramento, 2008.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 252
	2. Course title: Water Operator Safety
	3. Abbreviated course title: Water Operator Safety
	4. Credit hours and contact hours: 0.75
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Basic process of ensuring a safe working environment for water and wastewater operators. Topics include inspections, procedures, and programs which ensure safety in the workplace.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 226 – Water Chemistry.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Demonstrate their awareness of the hazards of working in water and wastewater operations;
* Develop and establish a safety/survival program; and
* Conduct routine safety inspections of a water or wastewater system.
	1. Content outline:
* Plant safety
* Safe procedures
* Safety/survival programs
* Inspecting vehicles and equipment
* Tailgate safety sessions
* Protecting the public
* Inspecting water and wastewater facilities
* Identifying hazards
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Operation of Municipal Wastewater Treatment Plants, MOP 11, Sixth Edition, Water Environment Federation, 2007.
* Operation of Wastewater Treatment Plants, Volume II, Seventh Edition, California State University, Sacramento, 2008.
* Operation and Maintenance of Wastewater Collection Systems, Volume I, Sixth Edition, California State University, Sacramento, 2003.
* Operation and Maintenance of Wastewater Collection Systems, Volume II, Sixth Edition, California State University, Sacramento, 2003.
* Water Treatment Plant Operation, Volume II, Fifth Edition, California State University, Sacramento, 2006.
* Water Distribution System Operation and Maintenance, Fifth Edition, California State University, Sacramento, 2005.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 253
	2. Course title: Wastewater Regulations
	3. Abbreviated course title: Wastewater Regulations
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites/corequisites: None
	7. Course catalog listing: Analysis of all major forms of regulation that apply to the wastewater industry. Topics include the evolution of the Clean Water Act, pretreatment program requirements, permit compliance, safety regulations, and the National Pollutant Discharge Elimination System (NPDES).

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 226 – Water Chemistry
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Identify the main forms of wastewater legislation;
* Recognize why a wastewater facility must remain in compliance with all applicable or relevant rules and regulations; and
* Recognize how a wastewater facility can remain in compliance with all applicable or relevant rules and regulations.
	1. Content outline:
* Evolution of the Clean Water Act
* Pretreatment program requirements
* Permit compliance and wastewater treatment systems
* Safety regulations and requirements
* National Pollutant Discharge Elimination System (NPDES)
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Operation of Municipal Wastewater Treatment Plants, MOP 11, Sixth Edition, Water Environment Federation, 2007.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 254
	2. Course title: Corrosion Control in Water Operations
	3. Abbreviated course title: Corrosion Control in Water Ops
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 203
	7. Course catalog listing: Investigation of the methods and techniques used to minimize corrosion in water treatment facilities. Topics include corrosion control methods, facilities, regulations, record keeping, and safety precautions.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 230 – Advanced Water Treatment
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of corrosion control;
* Identify the methods used in corrosion control; and
* Recognize the design factors involved in limiting corrosion.
	1. Content outline:
* Purposes of corrosion control
* Water system corrosion
* Corrosion control methods
* Corrosion control facilities
* Corrosion control regulations
* Corrosion control safety precautions
* Corrosion control record keeping
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 255
	2. Course title: Ion Exchange Processes in Water Treatment
	3. Abbreviated course title: Ion Exchange in Water Treatmnt
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 203
	7. Course catalog listing: Process and equipment used in ion exchange treatment of water. Topics include ion exchange softening, operation of ion exchange processes, and record keeping.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 230 – Advanced Water Treatment.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of ion exchange;
* Identify the equipment and structures used in ion exchange; and
* Recognize the design factors involved in planning a ion exchange softening facility.
	1. Content outline:
* Ion exchange softening
* Operation of ion exchange processes
* Ion exchange record keeping
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 256
	2. Course title: Adsorption Processes in Water Treatment
	3. Abbreviated course title: Adsorption in Water Treatment
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 203
	7. Course catalog listing: Analysis of the process and equipment used in the adsorption process in water treatment. Topics include the principles of adsorption, adsorption facilities, regulations, operating procedures, safety precautions, and record keeping.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 230 – Advanced Water Treatment.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the principles of adsorption in drinking water treatment;
* Identify the equipment and structures used in adsorption facilities; and
* Recognize the design factors involved in planning an adsorption facility
	1. Content outline:
* Process description
* The principles of adsorption
* Adsorption facilities
* Regulations
* Operating procedures for adsorption
* Safety precautions
* Record keeping
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 257
	2. Course title: Aeration Processes in Water Treatment
	3. Abbreviated course title: Aeration in Water Treatment
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 203
	7. Course catalog listing: Investigation of the process and equipment used during the aeration process in water treatment. Topics include process description, types of aerators, regulations, control tests, operating problems, safety precautions, and record keeping.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 230 – Advanced Water Treatment
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of aeration in water treatment;
* Identify the equipment and structures used in aeration; and
* Recognize the design factors involved aeration units.
	1. Content outline:
* Process description
* Types of aerators
* Regulations
* Control tests
* Operating problems
* Safety precautions
* Record keeping
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 258
	2. Course title: Membrane Processes in Water Treatment
	3. Abbreviated course title: Membrane Proc in Water Treat
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 203
	7. Course catalog listing: Exploration of the processes and equipment used in membrane filtration. Topics include microfiltration facilities, pleated membrane facilities, nanofiltration and reverse osmosis facilities, operating problems, and record keeping.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 230 – Advanced Water Treatment
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of membrane filtration;
* Identify the equipment and structures used in membrane filtration; and
* Recognize the design factors involved in membrane filtration.
	1. Content outline:
* Description of membrane processes
* Microfiltration facilities
* Pleated membrane facilities
* Nanofiltration and reverse osmosis facilities
* Operation of the reverse osmosis process
* Operating problems
* Record keeping
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 1/31/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 259
	2. Course title: Introduction to Residuals Management in Water Operations
	3. Abbreviated course title: Residual Mgmt in Water Ops
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites: WTTI 203 or WTTI 204
	7. Course catalog listing: Equipment, structures, and processes associated with residuals management in water and wastewater systems. Topics include sludge calculations, removal of sludge by traditional sedimentation processes, softening sludge, and solids separation technology.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces portions of WTTI 230 – Advanced Water Treatment and WTTI 231 – Advanced Wastewater Treatment.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of residuals management;
* Identify the equipment and structures used residuals management; and
* Recognize the design factors involved in planning a residuals management system.
	1. Content outline:
* Process description
* Residual facilities and operations
* Sludge calculations
* Removal of sludge by traditional sedimentation processes
* Softening sludge
* Solids separation technologies
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Treatment, Fourth Edition, American Water Works Association, 2010.
* Advanced Waste Treatment, Fifth Edition, California State University, Sacramento, 2006.
* Industrial Waste Treatment, Volume II, 3rd Edition, California State University, Sacramento, 2007.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 2/1/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 260
	2. Course title: Suspended Growth Systems in Wastewater Operations
	3. Abbreviated course title: Suspend Growth Sys Wastewater
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 204
	7. Course catalog listing: Design and processes of suspended growth systems in wastewater treatment facilities. Topics include the operation of activated sludge plants, controlling biomass inventory, energy use and saving opportunities, aerobic digestion, and solids handling.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 231 – Advanced Wastewater Treatment.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of suspended growth systems;
* Identify the equipment and structures used in suspended growth systems; and
* Recognize the design factors involved in planning a suspended growth system.
	1. Content outline:
* Activated sludge process
* Strategies for controlling biomass inventory
* Energy use and energy saving opportunities
* Solving common operational problems
* Aerobic digestion
* Operation of conventional activated sludge plants
* Sludge digestion and solids handling
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Operation of Wastewater Treatment Plants, Volume II, Seventh Edition, California State University, Sacramento 2008.
* Operation of Municipal Wastewater Treatment Plants, MOP 11, Sixth Edition, Water Environment Federation, 2007.
* Activated Sludge – MOP OM-9, Second Edition, Water Environment Federation, 2002.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 2/1/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 261
	2. Course title: Attached Growth Systems in Wastewater Operations
	3. Abbreviated course title: Attach Growth Sys Wastewater
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 204
	7. Course catalog listing: Facilities and processes used in attached growth systems. Topics include trickling filters, biological filters, rotating biological contactors, and operation of attached growth systems.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 231 – Advanced Wastewater Treatment.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of attached growth systems;
* Identify the equipment and structures used in attached growth systems; and
* Recognize the design factors involved in planning an attached growth system.
	1. Content outline:
* Trickling filters
* Biological filters
* Rotating biological contactors
* Operation of attached growth systems
* Maintenance of attached growth systems
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Industrial Waste Treatment, Volume II, Third Edition, California State University, Sacramento, 2007.
* Operation of Municipal Wastewater Treatment Plants, MOP 11, Sixth Edition, Water Environment Federation, 2007.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 2/1/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 262
	2. Course title: Nutrient Removal Processes in Water Operations
	3. Abbreviated course title: Nutrient Removal in Water Ops
	4. Credit hours and contact hours: 1
	5. Type of course: Lecture
	6. Prerequisites: WTTI 203 or WTTI 204
	7. Course catalog listing: Equipment, structures, and design factors used in nutrient removal. Topics include nutrients and their effects on the environment, regulations, structured process models for nutrient removal, troubleshooting for full-scale nutrient removal facilities, and aquatic natural treatment systems.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 231 – Advanced Wastewater Treatment.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of nutrient removal;
* Identify the equipment and structures used in nutrient removal; and
* Recognize the design factors involved in planning a nutrient removal system.
	1. Content outline:
* Phosphorus removal
* Nitrogen removal
* Enhanced biological (nutrient) control
* Solids removal from secondary effluents
* Nutrients and their effects on the environment
* Regulation of nutrients in the effluents of wastewater treatment Plants
* Structured process models for nutrient removal
* Troubleshooting for full-scale nutrient removal facilities
* Aquatic Natural Treatment Systems
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Advanced Waste Treatment, Fifth Edition, California State University, Sacramento, 2006.
* Operation of Municipal Wastewater Treatment Plants, MOP 11, Sixth Edition, Water Environment Federation, 2007.
* Nutrient Removal, MOP 34, Water Environment Federation, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 2/1/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 263
	2. Course title: Industrial Wastewater Pretreatment Processes
	3. Abbreviated course title: Indust Wastewater Pretreatment
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 204
	7. Course catalog listing: Equipment, structures, and process involved in pretreatment of wastewater. Topics include regulations governing industrial pretreatment, troubleshooting, and maintaining pretreatment operations.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. In particular, this course replaces a portion of WTTI 231 – Advanced Wastewater Treatment.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of industrial pretreatment;
* Identify the equipment and structures used for industrial pretreatment; and
* Recognize the design factors involved in planning an industrial pretreatment facility.
	1. Content outline:
* Regulations governing industrial pretreatment
* Types of industrial pretreatment processes
* Equipment used in industrial pretreatment
* Troubleshooting industrial pretreatment processes
* Maintaining industrial pretreatment processes
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Industrial Waste Treatment, Volume I, California State University, Sacramento, 2005.
* Operation of Municipal Wastewater Treatment Plants, MOP 11, Sixth Edition, Water Environment Federation, 2007.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 2/1/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 264
	2. Course title: Wastewater Residuals Management
	3. Abbreviated course title: Wastewater Residuals Mgmt
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisite: WTTI 259
	7. Course catalog listing: Equipment, structures, and processes used in wastewater residuals management. Topics include the stabilization, thickening, dewatering, drying, and composting of sludge, and biosolids reduction processes.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. This class will follow this format, however, it is not tied to any existing course.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of wastewater residuals management;
* Identify the equipment and structures used in wastewater residuals management; and
* Recognize the design factors involved in planning an effective wastewater residuals management system.
	1. Content outline:
* Process description
* Wastewater residual facilities
* Wastewater residual operations
* Sludge stabilization
* Sludge thickening
* Sludge dewatering
* Sludge drying
* Sludge composting
* Biosolids reduction processes
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Industrial Waste Treatment, Volume II, Third Edition, California State University, Sacramento, 2007.
* Operation of Municipal Wastewater Treatment Plants, MOP 11, Sixth Edition, Water Environment Federation, 2007.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 2/1/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 265
	2. Course title: Recordkeeping and Reporting for Water Operations
	3. Abbreviated course title: Records & Reports for Water Op
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites: WTTI 203 or WTTI 204
	7. Course catalog listing: Techniques for keeping effective records and reports for a water or wastewater utility. Topics include computer recordkeeping systems, equipment and maintenance records, plant operations data, procurement and inventory records, personnel records, and disposition of plant and system records.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. This course will follow this format, however, it is not tied to any existing course.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of records and reports; and
* Identify the systems and structures of effective recordkeeping and reporting.
	1. Content outline:
* Purpose of records
* Computer recordkeeping systems
* Types of records
* Equipment and maintenance records
* Plant operations data
* Procurement records
* Inventory records
* Personnel records
* Disposition of plant and system records
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Operation of Wastewater Treatment Plants, Volume II, Seventh Edition, California State University, Sacramento, 2008.
* Utility Management, Second Edition, California State University, Sacramento, 2004.
* Operation of Municipal Wastewater Treatment Plants, MOP 11, Sixth Edition, Water Environment Federation, 2007.
* Water Treatment Plant Operation, Volume II, Fifth Edition, California State University, Sacramento, 2006.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 2/1/11

**Ogden College of Science & Engineering**

**Department of Architectural & Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jana Fattic, jana.fattic@wku.edu, 745-8706

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: WTTI 266
	2. Course title: Customer Service and Public Relations in Water Operations
	3. Abbreviated course title: Cust Service & PR in Water Ops
	4. Credit hours and contact hours: 0.5
	5. Type of course: Lecture
	6. Prerequisites: WTTI 203 or WTTI 204
	7. Course catalog listing: Analysis of the methods by which water and wastewater utilities deal with customers and the public. Topics include the roles of water distribution personnel and informed employees in public relations, formal public relations programs, and general principles of customer inquiries and complaint investigation.

**2. Rationale:**

* 1. Reason for developing the proposed course: The current courses in the Water Resource Management degree program are being divided into smaller modules in order to make the program more appealing and accessible to existing water treatment technicians and operators. Information from a steering committee consisting of industry professionals, trade associations, and governmental certification authorities indicates that there is a need for such accommodation for those already in the workforce.
	2. Projected enrollment in the proposed course: 20 students per year, based on interest expressed by members of the steering committee and current demand for the existing courses.
	3. Relationship of the proposed course to courses now offered by the department: Modular courses will eventually replace all of the current 3-hour courses in the program. This course will follow this format; however, it is not tied to any existing course.
	4. Relationship of the proposed course to courses offered in other departments: No other departments at WKU offer such a course.
	5. Relationship of the proposed course to courses offered in other institutions: Other educational institutions offer courses in water system operations (Florida Gateway College, Bristol Community College), but none in a modular fashion. This is an innovative approach.

**3. Discussion of proposed course:**

* 1. Course objectives: Upon completing this course, students will be able to:
* Understand the purposes of quality customer service and public relations;
* Identify the methods by which these are performed effectively; and
* Recognize the factors involved in planning efficient customer service and public relations services.
	1. Content outline:
* The role of public relations
* The role of water distribution personnel
* The role of informed employees in public relations
* Formal public relations programs
* General principles of customer inquiries and complaint investigation
* Handling specific complaints
	1. Student expectations and requirements: Quizzes and exams based on textbook and lecture materials.
	2. Tentative texts and course materials:
* Principles and Practices of Water Supply Operations: Water Transmission and Distribution, Fourth Edition, American Water Works Association, 2010.
* Principles and Practices of Water Supply Operations: Water Quality, Fourth Edition, American Water Works Association, 2010.

**4. Resources:**

* 1. Library resources: No new library resources needed.
	2. Computer resources: No new computer resources needed.

**5. Budget implications:**

* 1. Proposed method of staffing: Faculty and staff in the Center for Water Resource Studies will form the core staff for all WTI courses, along with qualified faculty from appropriate departments within the university community. The primary instructional mode for this course will be web-delivered, independent learning, for which nationally prominent practitioners meeting WKU credentialing requirements will he recruited as instructors of record.
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

**6. Proposed term for implementation: Fall 2011**

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

Department of Architectural & Mfg Sciences: 2/18/11

 Ogden College Curriculum Committee \_\_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: October 25, 2010

**Ogden College of Science and Engineering**

**Department of Architectural and Manufacturing Sciences**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: John Khouryieh, hanna.khouryieh@wku.edu, (270)-852-6407

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: AMS 395
	2. Course title: Fundamentals of HACCP
	3. Abbreviated course title: Fundamentals of HACCP
	4. Credit hours and contact hours: 3
	5. Type of course: L
	6. Prerequisites: AMS 301
	7. Course catalog listing:

Development and implementation of the Hazard Analysis and Critical Control Point (HACCP) system and its application in the food processing industry.

**2. Rationale:**

* 1. Reason for developing the proposed course:

HACCP is a prevention food safety system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement, and handling, to manufacturing, distribution, and consumption of the finished product. The HACCP system is developed to prevent food safety problems before they occur rather than trying to identify them after they are present. The HACCP program has been mandated by the USDA and FDA for the nation's meat, poultry, seafood and juice processors. This mandatory rule necessitates extensive training in HACCP for food industry managers. Our students will be trained and prepared to take responsibility in the food industry for proper food handling to eliminate hazards and prevent food borne illness through implementing effective HACCP plans.

* 1. Projected enrollment in the proposed course: This course will be required for students enrolled in the Food Automation and Manufacturing (changing to Food Processing and Technology) Program. Based on articulation agreements with KCTCS and data collected from industrial partners, we believe that the enrollment will grow to about 20 students per section. However, because this program is being offered at WKU’s Owensboro campus, recruitment will be vital in order to build the enrollment.
	2. Relationship of the proposed course to courses now offered by the department: This department offers no other such courses.
	3. Relationship of the proposed course to courses offered in other departments: None of the WKU departments focus on HACCP plan development and implementation.
	4. Relationship of the proposed course to courses offered in other institutions: Although there are no courses like the proposed course at our benchmark institutions or in the state of Kentucky, there are many institutions that offer at least one course for HACCP development and implementation, including: HACCP at Purdue University, Principles of HACCP at Kansas State University, Fundamentals of HACCP at Pennsylvania State University, HACCP at Virginia Tech University, Introduction to HACCP at North Carolina State University, HACCP at Texas A&M University.

**3. Discussion of proposed course:**

* 1. Course objectives:

Students completing the course should be able to:

* Understand the principles of HACCP and its prerequisite programs (GMPs, SOPs, SSOPs) and apply them to the food processing industry through the development of HACCP plans.
* Identify potential hazards (biological, chemical and physical) that posefood safety challenges to food products and characterize the critical control points that can be monitored to reduce or eliminate the hazards.
* Develop an HACCP plan and understand the steps and team dynamics necessary in the development and implementation of an HACCP program.
	1. Content outline:

- Organizations, regulations and initiatives

- Prerequisite programs: GMPs, SOPs, SSOPs

- Preliminary HACCP steps

- HACCP Plan Development

- Potential hazards: Biological, physical and chemical

- Principle 1-Conducting a hazard analysis

- Principle 2-Identifying critical control points (CCPs)

- HACCP validation

- Principle 3-Establishing critical limits (CL)

- Principle 4-Monitoring CCPs

- Principle 5-Establishing corrective actions (CA)

- Principle 6-Establishing verification procedures

- Principle 7-Establishing recordkeeping procedures

- Recalls

- Setting up a traceback system

- Implementing and maintaining HACCP

* 1. Student expectations and requirements:

- Successfully develop HACCP plan

- Complete required examinations

- Complete required readings including text and outside sources

- Attend lectures and participate in discussion

- Complete all assignments including case studies

- Participate in all group and team activities

* 1. Tentative texts and course materials:

HACCP: A Systematic Approach to Food Safety. A Comprehensive Manual for Developing and Implementing a Hazard Analysis and Critical Control Point Plan. Virginia N. Scott and Kenneth E. Stevenson, Editors, Food Products Association, Fourth Edition, 2006.

**4. Resources:**

* 1. Library resources: See attached library resource form.
	2. Computer resources: Existing departmental computer facilities are adequate to facilitate this course.

**5. Budget implications:**

* 1. Proposed method of staffing: A current member of the faculty with expertise in food science will be teaching the class.
	2. Special equipment needed: This course will require no special equipment.
	3. Expendable materials needed: This course will not require any more expendable material than any other lecture course taught within the AMS Department.
	4. Laboratory materials needed: This course will not require any laboratory materials.

**6. Proposed term for implementation:**

 **Fall 2011**

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

AMS Department/Division: \_\_\_\_\_\_\_\_2-4-11\_\_\_\_

 OCSE Curriculum Committee \_\_\_\_\_\_\_\_3/3/11\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: April 28, 2010

**Ogden College of Science and Engineering**

**Department of Mathematics**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Nezam Iraniparast, nezam.irniparast@wku.edu, Phone: 56218

**1. Identification of proposed course:**

* 1. Course prefix (subject area) and number: MATH 370
	2. Course title: Applied Techniques in Mathematics
	3. Abbreviated course title: Appl Techniques in Math
	4. Credit hours and contact hours: 3
	5. Type of course: L
	6. Prerequisites: MATH 237, MATH 331 with grades of C or higher
	7. Course catalog listing:

Matrices, systems of ordinary differential equations, complex variables, and at least one of the topics from Fourier analysis, numerical analysis, or optimization (linear programming, Lagrange multipliers).

**2. Rationale:**

* 1. Reason for developing the proposed course:

The department proposes MATH 370 (Applied Techniques in Mathematics) to provide engineering students and mathematics majors and minors with an overview of fundamental techniques of applied mathematics. The proposed course will fill the needs of the engineering students for one such course and give math students a foundation for further study in applied areas. This dual function should insure course enrollment at an acceptable level.

* 1. Projected enrollment in the proposed course:

Approximately 30 students will take this course every year.

* 1. Relationship of the proposed course to courses now offered by the department:

This course will build upon the mathematical skills learned in MATH 237 and MATH 331.

* 1. Relationship of the proposed course to courses offered in other departments:

No other course with contents similar to this course is offered on campus.

* 1. Relationship of the proposed course to courses offered in other institutions:

No other institution in the benchmark list has a course with the exclusive topics of MATH 370. However, most departments, including ours, have these topics scattered in their inventory of courses. We have isolated these specific topics to provide the engineering students and mathematics majors and minors with an introduction to the fundamental techniques of applied mathematics.

**3. Discussion of proposed course:**

* 1. Course objectives:

Students who complete this course should have learned the following skills.

* The essentials of matrix algebra, determinants and computation of eigenvalues and eigenvectors.
* Method of solving systems of linear ordinary differential equations and their applications.
* Basics of complex variables, their algebra, complex-valued functions, and basic analysis of complex functions.
* Expanding real functions in Fourier sine and cosine series, or basics of numerical solution to algebraic and/or differential equations, or optimization techniques of linear/nonlinear programming
	1. Content outline:
* Matrices
* Systems of ordinary differential equations
* Complex variables
* At least one of the topics from Fourier analysis, numerical analysis, or optimization (linear programming, Lagrange multipliers).
	1. Student expectations and requirements:

Students are expected to attend class, turn in assignments for grade, and complete unit exams and a final exam.

* 1. Tentative texts and course materials:
* C.R. Wylie and L.C. Barrett, Advanced Engineering Mathematics, McGraw-Hill Companies; 6th Sub edition (March 1, 1995)
* Erwin Kreyszig, Advanced Engineering Mathematics, Wiley; 9th edition (May 10, 2006)
* Michael Greenberg, Advanced Engineering Mathematics, Prentice Hall, 2nd edition (January 18, 1998)
* Peter O'Neil, Advanced Engineering Mathematics, CL-Engineering; 6th edition (March 7, 2006)

**4. Resources:**

* 1. Library resources:

See attached library resources form.

* 1. Computer resources:

None

**5. Budget implications:**

* 1. Proposed method of staffing:

Existing faculty

* 1. Special equipment needed:

None

* 1. Expendable materials needed:

None

* 1. Laboratory materials needed:

None

**6. Proposed term for implementation:** Fall 2011

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

Mathematics and Computer Science: \_\_April 30, 2010\_\_\_\_

 Ogden College Curriculum Committee \_\_February 3, 2011\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 2/11/2011

**Ogden College**

**Department of Geography and Geology**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Chris Groves, chris.groves@wku.edu, 745-5974

1. Identification of proposed course:

* 1. Course prefix (subject area) and number: GEOG 459
	2. Course title: Physical Hydrology
	3. Abbreviated course title: Physical Hydrology
	4. Credit hours and contact hours: 3
	5. Type of course: L (Lecture)
	6. Prerequisites: MATH 136 with a grade of C or better, and GEOG 310 or GEOL 420.

1.7 Course catalog listing: A geologically-based and calculus-based introduction to the Earth's hydrologic cycle, using principles of fluid dynamics, that addresses components of atmospheric, surface, and ground waters. Field trips and field-based exercises are required.

2. Rationale:

* 1. Reason for developing the proposed course: This course introduces key fluids and hydrology concepts in a mathematical framework and provides an opportunity to strengthen the quantitative problem-solving experience of students by having applied and relevant applications of calculus. While there is an expectation of mathematical experience based on the prerequisites, all appropriate mathematical concepts will be reviewed. This course will be required in a newly proposed physical geography concentration in the geography major (#674) focused on karst geoscience, for which there is an increasing international demand. This course will provide the foundation for the additional required core and elective courses in this concentration.
	2. Projected enrollment in the proposed course: 10-15 students per offering.
	3. Relationship of the proposed course to courses now offered by the department: An introductory, non-calculus-based hydrology course (GEOG 310) is currently offered. The proposed course will complement content covered in physical geography and the summer Karst Field Studies program.
	4. Relationship of the proposed course to courses offered in other departments: Hydrology courses are offered in Engineering but they are not primarily geologically based.
	5. Relationship of the proposed course to courses offered in other institutions: Introductory, calculus-based hydrology courses are offered at a number of universities in the US and internationally, including the University of Kentucky.

3. Discussion of proposed course:

* 1. Course objectives:

• Students will develop an understanding of the hydrologic cycle; elements/properties of cycles such as reservoirs, fluxes, and residence times;

and the principles of fluid dynamics. Students will build on this knowledge to develop quantitative, predictive capabilities in understanding dynamics of water in the atmosphere, surface, and underground.

* 1. Content outline:
* The science of hydrology
* Mathematical backgrounds
* Land-atmosphere interactions
* Principles of fluid dynamics
* Open channel hydraulics
* Catchment hydrology
* Groundwater hydraulics
* Groundwater hydrology
* Water in the unsaturated zone.
	1. Student expectations and requirements: Written quizzes and exams, field project write-ups, homework exercises, and article discussions.
	2. Tentative texts and course materials: *Principles of Physical Hydrology* by Hornberger *et al.* (1998) and selected readings, including book chapters and journal articles.

4. Resources:

* 1. Library resources: See Library Form
	2. Computer resources: Internet access

5. Budget implications:

* 1. Proposed method of staffing: Current staff
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

6. Proposed term for implementation: Fall 2011

7. Dates of prior committee approvals:

 Geography and Geology Department: \_\_\_\_\_\_2/23/2011\_\_\_\_\_

 OCSE Curriculum Committee \_\_\_\_\_\_3/3/2011\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

Attachment: Bibliography, Library Resources Form, Course Inventory Form

Proposal Date: 2/11/2011

**Ogden College**

**Department of Geography and Geology**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Jason Polk, jason.polk@wku.edu, 745-5015

1. Identification of proposed course:

* 1. Course prefix (subject area) and number: GEOG 461
	2. Course title: Karst Environments
	3. Abbreviated course title: Karst Environments
	4. Credit hours and contact hours: 3
	5. Type of course: L (Lecture)
	6. Prerequisites: GEOG 310 or 459, GEOG 420, or permission of instructor.
	7. Course catalog listing: Provides a fundamental understanding of karst, focusing on the processes, landforms, and evolution of karst landscapes over time, with an emphasis on the characterization, distribution, and function of various karst environments. Field trips and field-based exercises are required.

2. Rationale:

* 1. Reason for developing the proposed course: This course will be a required core course for a newly proposed physical geography concentration in the #674 geography major focused on karst geoscience, for which there is an increasing international demand. This course provides the foundation for the additional required core and elective courses in this concentration. It will have an international scope and provide opportunity for student engagement in research and fieldwork.
	2. Projected enrollment in the proposed course: 20 students per offering.
	3. Relationship of the proposed course to courses now offered by the department: The proposed course will complement and expand on content addressed in physical geography and in the summer Karst Field Studies program.
	4. Relationship of the proposed course to courses offered in other departments: No similar courses are currently offered.
	5. Relationship of the proposed course to courses offered in other institutions: Few universities offer a similar course due to the specialized nature of the field, and no university in Kentucky currently offers a similar course. However, a few programs, such as those found at the University of South Florida and Mississippi State University, have a similar type of course offering primarily for graduate-level students.

**3. Discussion of proposed course:**

* 1. Course objectives:

• Students will develop a thorough understanding of landforms, processes, and environmental challenges associated with karst landscape/aquifer systems

• Students will understand spatial distribution of the world’s karst regions and the geologic/climatic/temporal controls that influence that distribution and the similarities/differences between various karst systems.

• Students will understand principle environmental challenges that influence human development within karst regions, and gain some knowledge of the solutions to these problems

• Students will understand the scientific method and carry out field- and lab-based exercises

* 1. Content outline:
* Introduction to a framework for karst system analysis
* Rocks: Lithologic component of karst evolution
* Fluids: Climatic component of karst evolution
* Geometry: Structural component of karst evolution
* Field Methods: Introduction to cave survey
* Relief: Topographic element of karst evolution
* Karst landscape denudation and evolution
* Time, karst landscape evolution
* Radiogenic and stable isotope applications
* Surface landforms in karst
* Subsurface landforms in karst
* Karst ecology
* Human-landscape interaction
* Karst management and education
	1. Student expectations and requirements: The course includes several written exams, an individual comparative karst landscape research project, and article discussions.
	2. Tentative texts and course materials: *Cave Geology* by Art Palmer (2007), and selected readings.

4. Resources:

* 1. Library resources: See Library Form
	2. Computer resources: Internet access

5. Budget implications:

* 1. Proposed method of staffing: Current staff
	2. Special equipment needed: None
	3. Expendable materials needed: None
	4. Laboratory materials needed: None

6. Proposed term for implementation: Fall 2011

7. Dates of prior committee approvals:

Geography and Geology Department \_\_\_\_\_2/23/2011\_\_\_\_\_

 OCSE Curriculum Committee \_\_\_\_\_3/3/2011\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Bibliography, Library Resources Form**, **Course Inventory Form**

Proposal Date: 2/16/11

**Ogden College of Science and Engineering**

**Department of** **Geography and Geology**

**Proposal to Create a New Course**

**(Action Item)**

Contact Person: Daniel Reader e-mail:daniel.reader@wku.edu Phone: 5-2813

# Identification of proposed course

Prefix and number: GEOG 489

Title: Alternatives in Sustainability

Abbreviated title: Alternatives in Sustainability

Credit hours: 3 hrs

Type of course:

: GEOG 280

Catalog course listing: This capstone course for the Minor in Sustainability addresses all aspects of sustainability theory and practice, including problem-solving and decision-making techniques and critical analyses of prominent sustainability plans.

# Rationale

# Reason for developing the proposed course:

# This course is being developed as a required capstone course for the Sustainability Minor in the Department of Geography and Geology.

Projected enrollment in the proposed course:

15-20 students per offering based upon previous enrollment in other courses in environmental geography.

Relationship of the proposed course to courses now offered by the department:

The department does not currently offer a capstone course in sustainability. The proposed course will bring together theories and practices introduced in other courses (such as GEOG 280, GEOG 380, and GEOG 474) and focus on critical analyses of various sustainability plans

Relationship of the proposed course to courses offered in other departments:

While there are several courses that variously focus on ecology, environmental issues, or socio-economic problems, there are no courses offered at Western that are similar to or related to applications in sustainability.

Relationship of the proposed course to courses offered in other institutions:

The proposed course is broadly comparable in scope and content to undergraduate courses offered at James Madison University (GEOG 429), Morehead State University (GEOG 345), and Towson University (BIOL 306), and at many larger public and private institutions.

# Discussion of proposed course

Course objectives:

Students will gain a more complete understanding of the concepts of sustainability through a critical analysis of current methodologies in the field, culminating in project proposals in sustainability that are relevant, both locally and globally, to their lives in the 21st century.

Content outline:

* Problem Solving in Sustainability
* Values and Decision Making in Sustainability
* Risk Assessment
* Cost-Benefit Analysis
* Outcomes and their Evaluation
* Plan B – A Proposed Alternative
1. Food as the “weak link”
2. Fresh Water Shortages
3. Anthropogenic Climate Change
4. Energy Alternatives
5. Urbanization and Livable Cities
6. Poverty Eradication and the Education of Girls
7. Ecosystem Restoration
* Other Alternatives

Student expectations and requirements:

Performance will be evaluated based upon two exams, a project proposal, and course participation.

Tentative texts and course materials:

Brown, Lester R. (2010) *Plan B 4.0: Mobilizing to Save Civilization.* Earth Policy Institute, W.W. Norton & Co.: New York. (Free download available. Updated annually.)

 Holmgren, D. (2009) *Future Scenarios.* Chelsea Green:White River Junction, VT.

# Resources

Library resources: See attached library resource form and bibliography.

Computer resources: No new additional resources required.

# Budget implications

Proposed method of staffing: Existing faculty will teach this course.

Special equipment needed: None.

Expendable materials needed: None.

Laboratory supplies needed:  None.

# Proposed term for implementation: Spring 2012

**Dates of committee approvals:**

Geography & Geology Department \_\_\_\_\_\_\_\_\_\_2/23/2011\_\_\_\_\_\_\_\_\_\_\_

 College Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_3/3/2011\_\_\_\_\_\_\_\_\_\_\_

University Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachments: Bibliography, Library Resources Form,** [**Course Inventory Form**](http://www.wku.edu/Dept/Support/AcadAffairs/Registrar/Course_Inven_new_one_form.doc)

Proposal Date: October 25, 2010

**Ogden College of Science and Engineering**

**Department of Architectural and Manufacturing Sciences**

**Proposal to Make Multiple Revisions to a Course**

**(Action Item)**

Contact Person: John Khouryieh, hanna.khouryieh@wku.edu, (270)-852-6407

**1. Identification of course:**

* 1. Current course prefix (subject area) and number: AMS 303
	2. Course title: Food Regulations
	3. Credit hours: 3

**2. Revise course title:**

* 1. Current course title: Food Regulations
	2. Proposed course title: Food Laws and Regulations
	3. Proposed abbreviated title: Food Laws and Regulations
	4. Rationale for revision of course title: There is a difference between laws and regulations. Laws are acts of Congress that have been signed by the President, while regulations are administrative codes or rules issued by governmental agencies to enforce statutes. Teaching food regulations without laws is meaningless. Therefore, students need to be introduced to both laws and regulations.

**3. Revise course number: N/A**

**4. Revise course prerequisites:**

4.1 Current prerequisites:

Prerequisites: Chem 105, Bio 207, and 208

4.2 Proposed prerequisite: AMS 301

4.3 Rationale for revision of course prerequisites/corequisites/special requirements: Students only need to know the basic food science principles before taking this course.

4.4 Effect on completion of major/minor sequence: None

**5. Revise course catalog listing:**

* 1. Current course catalog listing: Provides an understanding of the federal regulation on food manufacturing organizations, including documentation, audits, and controls. Emphasis will be placed on USDA and FDA regulatory requirements.
	2. Proposed course catalog listing: History, development, and enforcement of major federal food statutes and regulations, with emphasis on the Federal Food, Drug, and Cosmetic Act (FDCA), the Food and Drug Administration (FDA) and the US Department of Agriculture (USDA) regulations.
	3. Rationale for revision of course catalog listing: The current course catalog listing doesn’t correctly describe the course content. Documentation, audits and controls are covered in a different course.

**6. Revise course credit hours: N/A**

**7. Proposed term for implementation:** Fall 2011

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

AMSDepartment/Division: \_\_\_\_\_\_\_\_2-4-11\_\_\_\_\_

 OCSE Curriculum Committee \_\_\_\_\_\_\_\_3/3/11\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Course Inventory Form**

Proposal Date: October 25, 2010

**Ogden College of Science and Engineering**

**Department of Architectural and Manufacturing Sciences**

**Proposal to Make Multiple Revisions to a Course**

**(Action Item)**

Contact Person: John Khouryieh, hanna.khouryieh@wku.edu, (270)-852-6407

**1. Identification of course:**

* 1. Current course prefix (subject area) and number: AMS 352
	2. Course title: Food Processing I
	3. Credit hours: 3

**2. Revise course title:**

* 1. Current course title: Food Processing I
	2. Proposed course title: Food Processing: Unit Operations
	3. Proposed abbreviated title: Food Processing: Unit Operations
	4. Rationale for revision of course title: Adding “unit operations” to the course title makes it more informative and distinguishes it from the other food-processing course.

**3. Revise course number: N/A**

**4. Revise course prerequisites:**

4.1 Current prerequisites:

Prerequisites: AMS 342

4.2 Proposed prerequisites:

 Prerequisite: AMS 301

4.3 Rationale for revision of course prerequisites/corequisites/special requirements: AMS 342 doesn’t cover the unit operations used in the food processing industry. Therefore, the new prerequisite for this course will be AMS 301 Science of Food Processing.

4.4 Effect on completion of major/minor sequence: None

**5. Revise course catalog listing:**

* 1. Current course catalog listing: An introduction to different manufacturing and processing operations for post-harvest foods, and how each of these operations can be used to increase the supply, distribution, and marketing of food products around the world.
	2. Proposed course catalog listing: An overview of unit operations and processing techniques used in food processing industry. Topics include thermal processing, low temperature preservation, dehydration, irradiation, enzyme technology, separation and concentration, evaporation and distillation, and high-pressure and minimal processing methods.
	3. Rationale for revision of course catalog listing: The proposed description provides a more detailed listing of the different processing techniques discussed in the course.

**6. Revise course credit hours: N/A**

**7. Proposed term for implementation:** Fall 2011

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

AMSDepartment/Division: \_\_\_\_\_\_\_\_2-4-11\_\_\_\_\_\_

 OCSE Curriculum Committee \_\_\_\_\_\_\_\_3/3/11\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Course Inventory Form**

Proposal Date: October 25, 2010

**Ogden College of Science and Engineering**

**Department of Architectural and Manufacturing Sciences**

**Proposal to Make Multiple Revisions to a Course**

**(Action Item)**

Contact Person: John Khouryieh, hanna.khouryieh@wku.edu, (270)-852-6407

**1. Identification of course:**

* 1. Current course prefix (subject area) and number: AMS 381
	2. Course title: Food Manufacturing Quality and Safety
	3. Credit hours: 3

**2. Revise course title:**

* 1. Current course title: Food Manufacturing Quality and Safety
	2. Proposed course title: Food Quality Assurance
	3. Proposed abbreviated title: Food Quality Assurance
	4. Rationale for revision of course title: The current course title combines two major topics: food quality assurance and food safety. Both cannot be treated thoroughly in one course, so we are removing the food safety content from AMS 381 and including it in the proposed course AMS 395.

**3. Revise course number: N/A**

**4. Revise course prerequisites:**

4.1 Current prerequisites:

Prerequisite: AMS 371

4.2 Proposed prerequisites:

Prerequisite: AMS 301 or BIOL 207

4.3 Rationale for revision of course prerequisites:

This new course requires a foundation course in food science or one course in microbiology.

4.4 Effect on completion of major/minor sequence: None

**5. Revise course catalog listing:**

* 1. Current course catalog listing: Selecting and implementing quality systems in food manufacturing plants in order to ensure product quality and consumer safety.
	2. Proposed course catalog listing: Theory and application of quality assurance programs for the food processing industry, with emphasis on good manufacturing practices, sanitation programs, and audits.
	3. Rationale for revision of course catalog listing: The new listing includes more details of the course content and reflects the fact that food safety topics are not the main focus.

**6. Revise course credit hours: N/A**

**7. Proposed term for implementation:** Fall 2011

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

AMSDepartment/Division: \_\_\_\_\_\_\_\_2-4-11\_\_\_\_\_

 OCSE Curriculum Committee \_\_\_\_\_\_\_\_3-3-11\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Course Inventory Form**

Proposal Date: October 25, 2010

**Ogden College of Science and Engineering**

**Department of Architectural and Manufacturing Sciences**

**Proposal to Make Multiple Revisions to a Course**

**(Action Item)**

Contact Person: John Khouryieh, hanna.khouryieh@wku.edu, (270)-852-6407

**1. Identification of course:**

* 1. Current course prefix (subject area) and number: AMS 443
	2. Course title: Food Packaging
	3. Credit hours: 3

**2. Revise course title: N/A**

**3. Revise course number: N/A**

**4. Revise course prerequisites:**

4.1 Current prerequisites:

Prerequisites AMS 343

4.2 Proposed prerequisites:

 Prerequisite: AMS 301

4.3 Rationale for revision of course prerequisites:

AMS 343 is an automated systems course. It is more important for students to know the basic concepts of food science before they take the food packaging course. Therefore, the AMS 301, Science of Food Processing, should be the prerequisite for food packaging.

4.4 Effect on completion of major/minor sequence: None

**5. Revise course catalog listing:**

* 1. Current course catalog listing: Selecting and implementing appropriate packaging and distribution procedures for manufactured food products.
	2. Proposed course catalog listing: Principles of packaging science and technology, packaging materials, machinery and equipment, and packaging requirements applied to preservation and distribution of food products.
	3. Rationale for revision of course catalog listing: The current course catalog listing focuses only on the selection and implementation of packaging. The description does not mention the basic principles of packaging science and technology, packaging machinery and equipment, or packaging requirements, which are an important part of the course content.

**6. Revise course credit hours: N/A**

**7. Proposed term for implementation:** Fall 2011

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

AMSDepartment/Division: \_\_\_\_\_\_\_\_\_2-4-11\_\_\_\_

 OCSE Curriculum Committee \_\_\_\_\_\_\_\_\_3-3-11\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Course Inventory Form**

Proposal Date: October 25, 2010

**Ogden College of Science and Engineering**

**Department of Architectural and Manufacturing Sciences**

**Proposal to Make Multiple Revisions to a Course**

**(Action Item)**

Contact Person: John Khouryieh, hanna.khouryieh@wku.edu, (270)-852-6407

**1. Identification of course:**

* 1. Current course prefix (subject area) and number: AMS 462
	2. Course title: Food Processing II
	3. Credit hours: 3

**2. Revise course title:**

* 1. Current course title: Food Processing II
	2. Proposed course title: Commodity Food Processing
	3. Proposed abbreviated title: Commodity Food Processing
	4. Rationale for revision of course title: Adding “commodity” to the course title makes it more informative and distinguishes it from the other food-processing course (AMS 352).

**3. Revise course number: N/A**

**4. Revise course prerequisites/corequisites/special requirements: N/A**

**5. Revise course catalog listing:**

* 1. Current course catalog listing: This course will cover the most advanced alternatives to current food processing technologies. It will also review the globalization of America's food supply chain.
	2. Proposed course catalog listing: Principles of food processing, stages and operations, and product formulations for processing and manufacturing different categories of food products such as beverages, cereals, dairy, meats and poultry, and fruits and vegetables.
	3. Rationale for revision of course catalog listing: The revised listing provides a more detailed description of the course content, which builds on the content of AMS 352 by applying processing principles to specific commodities.

**6. Revise course credit hours: N/A**

**7. Proposed term for implementation:** Fall 2011

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

AMSDepartment/Division: \_\_\_\_\_\_\_\_\_2-4-11\_\_\_\_

 OCSE Curriculum Committee \_\_\_\_\_\_\_\_\_3-3-11\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Course Inventory Form**

Proposal Date: 2/15/11

**Department Of Geography And Geology**

**Odgen College Of Science And Engineering**

**Proposal to Make Multiple Revisions to a Course**

**(Action Item)**

Contact Person: Jun Yan e-mail: jun.yan@wku.edu Phone: -55982

**1. Identification of course:**

* 1. Current course prefix (subject area) and number: GEOG 419
	2. Course title: GIS Applications Development
	3. Credit hours: 3

**2. Revise course title:**

* 1. Current course title: GIS Applications Development
	2. Proposed course title: GIS Programming
	3. Proposed abbreviated title: GIS Programming
	4. Rationale for revision of course title: The GIS industry has progressed from programming with structured computer languages (usually developing a typical applications system) to programming with both structured and advanced scripting languages (such as Python). The new title, *GIS Programming*, covers a broader spectrum than the current title, *GIS Applications Development*. This revised title provides flexibility to cover either structured programming or scripting in future course offerings, although the course emphasizes scripting in GIS.

**3. Revise course prerequisites:**

3.1 Current prerequisites: GEOG 317, and CS 230 or CS 170

3.2 Proposed prerequisites: GEOG 317 and CS 170

3.3 Rationale for revision of course prerequisites: The revised course, GIS

 Programming, will cover Python scripting in ArcGIS. To keep up with the

 changes in the GIS industry, prior skills in Python are required. CS 170 covers

 Python programming. CS 230 is dropped as a prerequisite as it covers Visual

 Basic.NET.

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

**4. Proposed term for implementation: Spring 2012**

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

Geography and Geology Department: \_\_\_\_\_2/23/2011\_\_\_\_\_

 OCSE Curriculum Committee \_\_\_\_\_3/3/2011\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Course Inventory Form**

Proposal Date: 01/13/2010

**Ogden College of Science and Engineering**

**Department of Mathematics and Computer Science**

**Proposal to Make Multiple Revisions to a Course**

**(Action Item)**

Contact Person: Mikhail Khenner e-mail: mikhail.khenner@wku.edu Phone: 745-2797

 Nezam Iraniparast e-mail: nezam.iraniparast@wku.edu Phone: 745-6281

**1. Identification of course:**

* 1. Current course prefix (subject area) and number: MATH 431
	2. Course title: Intermediate Analysis I
	3. Credit hours: 3.00

**2. Revise course title: NA**

* 1. Current course title: NA
	2. Proposed course title: NA
	3. Proposed abbreviated title: NA
	4. Rationale for revision of course title: NA

**3. Revise course number: NA**

* 1. Current course number: NA
	2. Proposed course number: NA
	3. Rationale for revision of course number: NA

**4. Revise course prerequisites/corequisites/special requirements:**

4.1 Current prerequisite:

 MATH 317, Introduction to Algebraic Systems.

4.2 Proposed prerequisite:

 MATH 337, Elements of Real Analysis.

4.3 Rationale for revision of course prerequisite:

 The newly created MATH 337 will serve as a bridge course to facilitate the

 transition from calculus to analysis. Thus MATH 337 will offer better

 preparation for MATH 431.

4.4 Effect on completion of major/minor sequence: None

**5. Revise course catalog listing:**

* 1. Current course catalog listing:

Topics chosen from cardinality, limits, continuity, elementary topological concepts, sequences and series, differentiation and integration, elementary functional analysis.

* 1. Proposed course catalog listing:

Topics in analysis chosen from inverse and implicit function theorems, differentiation, integration, infinite series, series of functions, and elementary functional analysis.

* 1. Rationale for revision of course catalog listing:

Some elementary topics are being moved from MATH 431 to MATH 337, allowing other topics to be studied in greater depth.

**6. Revise course credit hours: NA**

* 1. Current course credit hours: NA
	2. Proposed course credit hours: NA
	3. Rationale for revision of course credit hours: NA

**7. Proposed term for implementation:** Fall 2010

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

Mathematics and Computer Science Department\_\_4-30-10\_\_\_\_\_\_\_\_\_\_

Ogden College Curriculum Committee \_\_3-3-11\_\_\_\_\_\_\_\_\_\_\_

 Professional Education Council \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Course Inventory Form**

Proposal Date: 01/13/2011

**Ogden College of Science and Engineering**

**Department of Mathematics and Computer Science**

**Proposal to Make Multiple Revisions to a Course**

**(Action Item)**

Contact Person: Mikhail Khenner e-mail: mikhail.khenner@wku.edu Phone: 745-2797

 Nezam Iraniparast e-mail: nezam.iraniparast@wku.edu Phone: 745-6281

**1. Identification of course:**

* 1. Current course prefix (subject area) and number: MATH 432
	2. Course title: Intermediate Analysis II
	3. Credit hours: 3.00

**2. Revise course title:**

* 1. Current course title: Intermediate Analysis II
	2. Proposed course title: Introduction to Measure Theory
	3. Proposed abbreviated title: Intro. to Measure Theory
	4. Rationale for revision of course title:

The new title better reflects the place and function of the course in the current sequence of analysis courses: MATH 337, Elements of Real Analysis; MATH 431, Intermediate Analysis I (changing to Intermediate Analysis); MATH 432, Introduction to Measure Theory.

**3. Revise course number:**

* 1. Current course number: NA
	2. Proposed course number: NA
	3. Rationale for revision of course number: NA

**4. Revise course prerequisites/corequisites/special requirements: NA**

4.1 Current prerequisite: NA

4.2 Proposed prerequisite: NA

4.3 Rationale for revision of course prerequisite: NA

4.4 Effect on completion of major/minor sequence: NA

**5. Revise course catalog listing:**

* 1. Current course catalog listing: Continuation of MATH 431
	2. Proposed course catalog listing:

Algebra of sets, axiom of choice, axioms for the real numbers, continuous functions, Borel sets, Lebesgue measure, Lebesgue integral.

* 1. Rationale for revision of course catalog listing:

The current listing is not specific, which often leads to misunderstanding and confusion on the part of students. Introduction to Measure theory is a more advanced study of the mathematical analysis, and is well suited to appear after the two foundational analysis courses MATH 337 and 431.

**6. Revise course credit hours: NA**

* 1. Current course credit hours: NA
	2. Proposed course credit hours: NA
	3. Rationale for revision of course credit hours: NA

**7. Proposed term for implementation:** Fall 2011

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

Mathematics and Computer Science Department\_\_\_\_\_1-21-11\_\_\_\_\_\_\_\_

Ogden College Curriculum Committee \_\_\_\_\_3-3-11\_\_\_\_\_\_\_\_\_\_

 Professional Education Council \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Course Inventory Form**

Proposal Date: 11/5/10

**Ogden College of Science and Engineering**

**Department of Mathematics and Computer Science**

**Proposal to Revise Course Credit Hours**

**(Action Item)**

Contact Person: Nezam Iraniparast nezam.iraniparast@wku.edu Phone: 56218

**1. Identification of course:**

* 1. Current course prefix (subject area) and number: MATH 498
	2. Course title: Senior Seminar
	3. Credit hours: 1

**2. Proposed course credit hours:** 3

**3. Rationale for the revision of course credit hours:**

Students in this class study the appropriate literature and conduct original/expository research. Their grades are based on a 25-minute presentation and a 7-11 page (single spaced) paper that must be typed with a technical word processor. Almost all presentations are made using Power Point. Recently, we have added more requirements to the students’ obligations. For the purpose of keeping the students on task, we now require two additional presentations and attendance at the talks given by others in the class. Even before adding these new requirements, some faculty members believed MATH 498 students deserved more than one hour of credit. With these new changes, the department is convinced that the amount of work involved warrants three credit hours instead of one.

**4. Proposed term for implementation:** Fall 2011

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

Mathematics and Computer Science Department \_\_\_\_\_11/15/10\_\_\_\_\_\_

 OCSE Curriculum Committee \_\_\_\_\_3/3/11\_\_\_\_\_\_\_

 Professional Education Council \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Course Inventory Form**

Proposal Date: October 25, 2010

**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. Current program reference number: 506
	2. Current program title: Advanced Manufacturing
	3. Credit hours: 78

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

 **Changes for all concentrations**

* Reduce total number of hours from 124 to 120
* Reduce total number of hours in the major to 74

**Changes for Food Automation and Manufacturing Concentration**

* Change the title of the concentration from Food Automation and Manufacturing to Food Processing and Technology.
* Add AMS 394 Lean Manufacturing and AMS 396 Introduction to Supply Chain Management to management core.
* Increase the number of hours in the management core from 24 to 30.
* Add Fundamentals of AMS 395 HACCP to concentration course list.
* Remove AMS 342 Manufacturing Operations and AMS 392 Quality Management from concentration course list.
* Change titles of AMS 303, AMS 352, AMS 381 and AMS 462 to reflect approved curriculum revisions.
* Reduce the number of advisor-approved electives in the concentration list from 8 to 1.
* Reduce the number of hours of concentration courses from 35 to 25.
* Require Fundamentals of Chemistry Lab CHEM 106, thereby increasing the general education hours from 45 to 46.

**Changes for Manufacturing and Industrial Distribution Concentration**

* Relocate AMS 394 Lean Manufacturing and AMS 396 Introduction to Supply Chain Management from list of concentration courses to management core.
* Change name of AMS 217 from Materials of Manufacturing to Industrial Materials
* Reduce the number of advisor-approved elective hours from 14 to 10.
* Increase the number of hours in the management core from 24 to 30
* Reduce the number of hours of concentration courses from 35 to 25.

**Changes for the Quality Systems Concentration**

* Add Introduction to AMS 396 Supply Chain Management to management core
* Relocate AMS 394 Lean Manufacturing from concentration to management core.
* Change Name of AMS 217 from Materials of Manufacturing to Industrial Materials
* Reduce number of advisor-approved elective hours from 16 to 7.
* Increase the number of hours in the management core from 24 to 30
* Reduce the number of hours of concentration courses from 35 to 25.
* Increase the number of elective hours in the program from 0 to 2.

**3. Detailed program description:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |   |  |  |  |  |
| Advanced Manufacturing | (OLD) 79 |  | Advanced Manufacturing | (NEW) 74 |
| Food Automation & Manufacturing |   |  | Food Processing and Technology |   |
| *Technical Core: 19hrs* |  | *Technical Core: 19hrs* |
| Introductory Accounting - Financial | ACCT200 | 3 |  | Introductory Accounting - Financial | ACCT200 | 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 |  | Internship I | 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: 24hrs*** |  | ***Management Core: 30hrs*** |
| 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 |  | Business Writing or Technical Writing  | ENG 306 or 307 | 3 |
| Advanced Public Speaking | COMM345 | 3 |  | Advanced Public Speaking | COMM345 | 3 |
| Business Law | MGT301 | 3 |  | Business Law | MGT301 | 3 |
| Quality Assurance | AMS371 | 3 |  | Quality Assurance | AMS371 | 3 |
|   |   |   |  | **Lean Manufacturing** | **AMS 394** | **3** |
|   |   |   |  | **Intro to Supply Chain Management** | **AMS 396** | **3** |
|   |   |   |  |  |  |  |
| ***Food Automation & Manufacturing Conc: 35hrs*** |  | ***Food Processing and Technology Conc: 25hrs*** |
| Science of Food Processing | AMS 301 | 3 |  | Science of Food Processing | AMS 301 | 3 |
| **Food Regulations** | **AMS 303** | **3** |  | **Food Laws and Regulations** | **AMS 303** | **3** |
| **Manufacturing Operations** | **AMS 342** | **3** |  |  |  |  |
| Automated Systems | AMS 343 | 3 |  | Automated Systems | AMS 343 | 3 |
| **Food Processing I** | **AMS 352** | **3** |  | **Food Processing: Unit Operations** | **AMS 352** | **3** |
|  |  |  |  | **Fundamentals of HACCP** | **AMS 395** | **3** |
| **Food Manufacturing Quality & Safety** | **AMS 381** | **3** |  | **Food Quality Assurance**  | **AMS 381** | **3** |
| **Quality Management** | **AMS 392** | **3** |  |  |  |  |
| Food Packaging | AMS 443 | 3 |  | Food Packaging | AMS 443 | 3 |
| **Food Processing II** | **AMS 462** | **3** |  | **Commodity Food Processing** | **AMS 462** | **3** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Advisor Approved Electives** |  | **8** |  | **Advisor Approved Electives** |  | **1** |
| General Education (New) | 45 hrs |   |  | General Education (New) | 46 hrs |   |
| Category A | ENG100 | 3 |  | Category A | ENG100 | 3 |
|   | ENG300 | 3 |  |   | ENG300 | 3 |
|   | Foreign Lang | 3 |  |   | Foreign Lang | 3 |
|   | Public Speaking | 3 |  |   | Public Speaking | 3 |
| Category B | Lit. Elective | 3 |  | Category B | Lit. Elective | 3 |
|   | Category B-II | 3 |  |   | Category B-II | 3 |
|   | Category B-II | 3 |  |   | Category B-II | 3 |
| Category C | HIST119/120 | 3 |  | Category C | HIST119/120 | 3 |
|   | ECON202 | 3 |  |   | ECON202 | 3 |
|   | Category C | 3 |  |   | Category C | 3 |
| Category D | MATH 117, or MATH 118 OR HIGHER | 3 |  | Category D | MATH 117, or MATH 118 OR HIGHER | 3 |
|  | CHEM 105 | 3 |  |  | CHEM 105 | 3 |
|  |   |   |  |  | **CHEM 106** | **1** |
|  | BIO 207 | 3 |  |  | BIO 207 | 3 |
|   | BIO 208 | 1 |  |   | BIO 208 | 1 |
| Category E | Category E | 3 |  | Category E | Category E | 3 |
| Category F | SFTY171 | 1 |  | Category F | SFTY171 | 1 |
|   | Category F | 1 |  |   | Category F | 1 |
| Electives |  |  | Electives |  |
| Electives |   | 0 |  | Electives |   | 0 |
| **Program Grand Total Hours:** |  | **124** |  | **Program Grand Total Hours:** |  | **120** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Advanced Manufacturing | (OLD) 78 |  | Advanced Manufacturing | (NEW) 74 |
| Manufacturing & Industrial Distribution |  | Manufacturing & Industrial Distribution |
| *Technical Core: 19hrs* |  | *Technical Core: 19hrs* |
| Introductory Accounting - Financial | ACCT200 | 3 |  | Introductory Accounting - Financial | ACCT200 | 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 |  | Internship I | 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: 24hrs*** |  | ***Management Core: 30hrs*** |
| 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 |  | Business Writing or Technical Writing  | ENG 306 or 307 | 3 |
| Advanced Public Speaking | COMM345 | 3 |  | Advanced Public Speaking | COMM345 | 3 |
| Business Law | MGT301 | 3 |  | Business Law | MGT301 | 3 |
| Quality Assurance | AMS371 | 3 |  | Quality Assurance | AMS371 | 3 |
|   |   |   |  | **Lean Manufacturing** | **AMS 394** | **3** |
|   |   |   |  | **Intro to Supply Chain Management** | **AMS 396** | **3** |
|   |   |   |  |   |   |   |
| ***Manufacturing & Industrial Distribution Conc: 35hrs*** |  | ***Manufacturing & Industrial Distribution Conc: 25hrs*** |
| **Materials of Manufacturing** | **AMS217** | **3** |  | **Industrial Materials** | **AMS217** | **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 |
| Computer Numeric Control | AMS370 | 3 |  | Computer Numeric Control | AMS370 | 3 |
| **Lean Manufacturing** | **AMS394** | **3** |  |  |  |  |
| **Intro to Supply Chain Management** | **AMS396** | **3** |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Advisor Approved Electives** |  | **14** |  | **Advisor Approved Electives** |  | **10** |
| General Education (New) | 46 hrs |   |  | General Education (New) | 46 hrs |   |
| Category A | ENG100 | 3 |  | Category A | ENG100 | 3 |
|   | ENG300 | 3 |  |   | ENG300 | 3 |
|   | Foreign Lang | 3 |  |   | Foreign Lang | 3 |
|   | Public Speaking | 3 |  |   | Public Speaking | 3 |
| Category B | Lit. Elective | 3 |  | Category B | Lit. Elective | 3 |
|   | Category B-II | 3 |  |   | Category B-II | 3 |
|   | Category B-II | 3 |  |   | Category B-II | 3 |
| Category C | HIST119/120 | 3 |  | Category C | HIST119/120 | 3 |
|   | ECON202 | 3 |  |   | ECON202 | 3 |
|   | Category C | 3 |  |   | Category C | 3 |
| Category D | MATH 117, or MATH 118 OR HIGHER | 3 |  | Category D | MATH 117, or MATH 118 OR HIGHER | 3 |
|  | CHEM 116 | 3 |  |  | CHEM 116 | 3 |
|  | CHEM 106 | 1 |  |  | CHEM 106 | 1 |
|  | PHYS201 | 4 |  |  | PHYS201 | 4 |
| Category E | Category E | 3 |  | Category E | Category E | 3 |
| Category F | SFTY171 | 1 |  | Category F | SFTY171 | 1 |
|   | Category F | 1 |  |   | Category F | 1 |
| Electives |  |  | Electives |  |
| Electives |   | 0 |  | Electives |   | 0 |
| **Program Grand Total Hours:** |  | **124** |  | **Program Grand Total Hours:** |  | **120** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Advanced Manufacturing | (OLD) 80 |  | Advanced Manufacturing | (NEW) 74 |
| Quality Systems |  | Quality Systems |
| *Technical Core: 19hrs* |  | *Technical Core: 19hrs* |
| Introductory Accounting - Financial | ACCT200 | 3 |  | Introductory Accounting - Financial | ACCT200 | 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 |  | Internship I | 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: 24hrs*** |  | ***Management Core: 30hrs*** |
| 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 |  | Business Writing or Technical Writing  | ENG 306 or 307 | 3 |
| Advanced Public Speaking | COMM345 | 3 |  | Advanced Public Speaking | COMM345 | 3 |
| Business Law | MGT301 | 3 |  | Business Law | MGT301 | 3 |
| Quality Assurance | AMS371 | 3 |  | Quality Assurance | AMS371 | 3 |
|  |  |  |  | **Lean Manufacturing** | **AMS 394** | **3** |
|  |  |  |  | **Intro to Supply Chain Management** | **AMS 396** | **3** |
|  |  |  |
| ***Quality Systems Conc: 37hrs*** |  | ***Quality Systems Conc: 25hrs*** |
| **Materials of Manufacturing** | **AMS217** | **3** |  | **Industrial Materials** | **AMS217** | **3** |
| Manufacturing Operations  | AMS342 | 3 |  | Manufacturing Operations  | AMS342 | 3 |
| Computer Numeric Control | AMS370 | 3 |  | Computer Numeric Control | AMS370 | 3 |
| Reliability & Probability | AMS 391 | 3 |  | Reliability & Probability | AMS 391 | 3 |
| Quality Management | AMS392 | 3 |  | Quality Management | AMS392 | 3 |
| **Lean Manufacturing** | **AMS394** | **3** |  |  |  |  |
| Design of Industrial Experiments | AMS471 | 3 |  | Design of Industrial Experiments | AMS471 | 3 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Advisor Approved Electives** |  | **16** |  | **Advisor Approved Electives** |  | **7** |
| General Education (New) | 44hrs  |   |  | General Education (New) | 44 hrs  |   |
| Category A | ENG100 | 3 |  | Category A | ENG100 | 3 |
|   | ENG300 | 3 |  |   | ENG300 | 3 |
|   | Foreign Lang | 3 |  |   | Foreign Lang | 3 |
|   | Public Speaking | 3 |  |   | Public Speaking | 3 |
| Category B | Lit. Elective | 3 |  | Category B | Lit. Elective | 3 |
|   | Category B-II | 3 |  |   | Category B-II | 3 |
|   | Category B-II | 3 |  |   | Category B-II | 3 |
| Category C | HIST119/120 | 3 |  | Category C | HIST119/120 | 3 |
|   | ECON202 | 3 |  |   | ECON202 | 3 |
|   | Category C | 3 |  |   | Category C | 3 |
| Category D | MATH 117, or MATH 118 OR HIGHER | 3 |  | Category D | MATH 117, or MATH 118 OR HIGHER | 3 |
|  | Category D-II | 3 |  |  | Category D-II | 3 |
|  | Category Dl-l | 3 |  |  | Category Dl-l | 3 |
|  |   |   |  |  |   |   |
| Category E | Category E | 3 |  | Category E | Category E | 3 |
| Category F | SFTY171 | 1 |  | Category F | SFTY171 | 1 |
|   | Category F | 1 |  |   | Category F | 1 |
| Electives |  |  | Electives |  |
| **Electives** |  | **0** |  | **Electives** |  | **2** |
| **Program Grand Total Hours:** |  | **124** |  | **Program Grand Total Hours:** |  | **120** |

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

*Advanced Manufacturing Program overview*

The proposed structure of the undergraduate Advanced Manufacturing Program will include 120 credit hours divided into 74 credit hours for the major and 46 credit hours for general education. The Advanced Manufacturing Program consists of three concentrations: 1) Food Automation and Manufacturing, 2) Manufacturing and Industrial Distribution, and 3) Quality Systems. Each concentration is divided into a technical core, a management core and a concentration core. The technical core and management core must be similar for the three concentrations. Therefore, any changes to one concentration must result in changes to the other two concentrations.

 *Food Automation & Manufacturing Concentration overview*

The Food Automation and Manufacturing Concentration was initially established through an initiative from Dr. Greg Arbuckle in 2008 so that the department could respond to the needs of the food processing industry in Kentucky for trained graduates in the area of food processing. The successful launch of the food concentration, recruitment of a food scientist, and establishment of a strong advisory board from the food industry indicate that the initial decision was a wise one. However, the enrollment needs to be further improved. Discussions with current students and advisors indicated that students wrongly think that they will be working on a production line after graduation if they major in food automation and manufacturing. Therefore, the changes for the current food automation and manufacturing concentration are necessary to eliminate this misconception, increase the students’ enrollment in the concentration, and improve its quality as well.

* The change in title from Food Automation and Manufacturing to Food Processing and Technology will greatly increase the visibility and influence of this concentration, thereby attracting highly qualified students, along with more food industry professionals. The change will also allow for greater opportunities for interdisciplinary education and research with the Departments of Agriculture and Chemistry and increase the number of potential food industry donors to the program.
* AMS 394 Lean Manufacturing and AMS 396 Introduction to Supply Chain Management are being added to the curriculum to address the concerns of food industry managers, who have indicated that having employees with backgrounds in those areas would add value to the production environment and that such courses would be beneficial for graduates seeking managerial positions in the food industry.
* The number of hours in the management core is increasing from 24 to 30 because we are adding AMS 394 and AMS 396 to the list of required courses.
* HACCP is a prevention food system, which has been mandated by the USDA and FDA for the nation’s meat, poultry, seafood and juice processors. With the addition of AMS 395 Fundamentals of HACCP, students will be trained and prepared to take responsibility in the food industry for proper food handling.
* Manufacturing Operations AMS 342 does not cover the unit operations used in the food industry, so it is being removed from the program. We currently require AMS 381 Food Quality Assurance and AMS 371 Quality Assurance in this program. To prevent redundancy we are removing AMS 392 Quality Management.
* The titles of AMS 303, AMS 352, AMS 381 and AMS 462 have been changed in the detailed program description to reflect previous revisions.
* To bring the total number of credit hours for graduation to 120, the number of advisor-approved elective hours has been reduced from 8 to 1.
* The number of hours of concentration courses is being reduced from 35 to 25 because AMS 342 and AMS 392 were removed, AMS 395 was added, and the number of elective hours was reduced.

*Manufacturing and Industrial Distribution overview*

The main changes in this concentration arose from the need to align its technical and management cores with those of the revised Food Processing and Technology Concentration. Another goal was to create a 74-hour major and a 120-hour undergraduate program.

* AMS 394 Lean Manufacturing and AMS 396 Introduction to Supply Chain Management were relocated from the list of concentration courses to the management core to match the course distribution in the revised Food Processing and Technology Concentration.
* The number of advisor-approved elective hours was reduced from 14 to 10 so that the total number of hours in the major would be 74.
* The change in the number of hours in the management core (from 24 to 30) and in the concentration courses (from 35 to 25) is the result of the relocation of AMS 394 and AMS 396 and the reduction in the number of advisor-approved elective hours.

*Quality System Concentration Overview*

The main changes in this concentration arose from the need to align its technical and management cores with those of the revised Food Processing and Technology Concentration. Another goal was to create a 74-hour major and a 120-hour undergraduate program.

* AMS 394 Lean Manufacturing and AMS 396 Introduction to Supply Chain Management were relocated from the list of concentration courses to the management core to match the course distribution in the revised Food Processing and Technology Concentration.
* The number of advisor-approved elective hours was reduced from 16 to 7 so that the total number of hours in the major would be 74.
* The change is the number of hours in the management core (from 24 to 30) and in the concentration courses (from 35 to 25) is the result of the relocation of AMS 394 and AMS 396 and the reduction in the number of advisor-approved elective hours.
* The number of elective hours was increased from 0 to 2 so that the total number of hours in the undergraduate program would be 120.

**5. Proposed term for implementation and special provisions:** Fall 2011

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

AMSDepartment/Division: \_\_\_2-4-11\_\_\_\_\_\_\_\_\_\_

 OCSE Curriculum Committee \_\_\_3-3-11\_\_\_\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Program Inventory Form**

# Proposal Date: 1/3/2011

#### Ogden College of Science and Engineering

**Department of Engineering**

**Proposal to Revise a Program**

**(Action Item)**

Contact Person: Mark Cambron email: mark.cambron@wku.edu phone: 5-8868

**1. Identification of program**

#  Reference Number: 537

* 1. Current Program Title: Electrical Engineering
	2. Credit Hours: 62

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

* Remove MATH 450 from being required with MATH 307 as an option for MATH 350
* Allow either EE 473 or PHYS 440
* Include ENGR 175 on University Experience options
* Replace EM 221 (or EM 222) and ME 365 with a list of science and engineering electives
* Modify the standards required to transition from being an Electrical Engineering – Prep major to an Electrical Engineering major.

**3. Detailed program description:**

|  |  |
| --- | --- |
| **Current Program**EE175 University Experience - EE 2 orUC 175 University Experience\*,and 2EE 101 Design I 1EE180 Digital Circuits 4EE200 Design II 1 EE210 Circuits & Networks I 3.5EE211 Circuits & Networks II 3.5EE300 Design III 1EE345 Electronics 4EE431 Intro. to Power Systems 3EE380 Microprocessors 4 EE400 Design IV 1EE401 Senior Design 3EE405 EE Senior Research Seminar 1EE420 Signals & Linear Systems 3EE450 Digital Signal Proc. 3 EE451 Digital Signal Proc. Lab 1EE460 Cont. Control Systems 4EE470 Communications 3EE473 EM Fields & Waves 3EE475 Communications Lab 1EE479 Fund. Of Optoelectronics 2EE Technical Electives 6 **Statics EM 221 or EM 222 3** **ME365 Thermal Science for EE 3**Tech. Course Total: 62 **Other Requirements**MATH136 Calculus I 4MATH137 Calculus II 4MATH237 Multivariable Calculus 4MATH331 Differential Equations 3MATH350 Advanced Engr. Math 3 orMATH307 Intro. Linear Algebra **and** 3**MATH450 Complex Variables 3**STAT301 Probability & Statistics 3PHYS255 University Physics I 4PHYS256 University Physics I Lab 1PHYS265 University Physics II 4  Science Elective 3 CS239 Prob Solving Comp Tech 3ECON ECON 202 or ECON 203 3 **Other Hours: 39** | **Proposed Program****ENGR 175 University Experience\*, and 1****EE 101 Design I 1** **or**EE175 University Experience - EE 2 orUC 175 University Experience\*,and 2EE 101 Design I 1EE180 Digital Circuits 4EE200 Design II 1 EE210 Circuits & Networks I 3.5EE211 Circuits & Networks II 3.5EE300 Design III 1EE345 Electronics 4EE431 Intro. to Power Systems 3EE380 Microprocessors 4 EE400 Design IV 1EE401 Senior Design 3EE405 EE Senior Research Seminar 1EE420 Signals & Linear Systems 3EE450 Digital Signal Proc. 3 EE451 Digital Signal Proc. Lab 1EE460 Cont. Control Systems 4EE470 Communications 3EE473 EM Fields & Waves 3 **or** **PHYS 440 Electricity and Magnetism 3**EE475 Communications Lab 1EE479 Fund. Of Optoelectronics 2EE Technical Electives 6  **Engineering/Science Electives 6**Tech. Course Total: 62 **Other Requirements**MATH136 Calculus I 4MATH137 Calculus II 4MATH237 Multivariable Calculus 4MATH331 Differential Equations 3 MATH350 Advanced Engr. Math 3  orMATH307 Intro. Linear Algebra 3STAT301 Probability & Statistics 3PHYS255 University Physics I 4PHYS256 University Physics I Lab 1PHYS265 University Physics II 4  Science Elective 3 CS239 Prob Solving Comp Tech 3ECON ECON 202 or ECON 203 3 **Other Hours: 39** |
|  |  |

\*EE/UC/**ENGR 175** is not required for transfer students.

**Engineering/Science Electives (take at least 6 hours)**

EM 221 or EM 222 or PHYS 350 3

ME 365 or ME 220 or PHYS 330 3

ME 240 Materials and Methods of Manufacturing 3

ME 330 or CE 341 or CE 342 3

PHYS450 Classical Mechanics II 3

PHYS 318 Data Acquisition Using Labview 3

|  |  |
| --- | --- |
| **Current****Academic Standards for the WKU/UofL Joint Electrical Engineering Program**Students are admitted as pre-major in Electrical Engineering. In order to transition from the pre-major to major and to graduate with a degree in Electrical Engineering, students must complete the following courses **with a GPA of 2.5 in these courses and** a grade of “C” or better in each course. EE 175 Univ Experience -EE 2 hrs. (or EE 101 for transfer students)EE 180 Digital Circuits 4 hrs.ENG 100 Composition 3 hrs.COMM 145or161 Public Speaking 3 hrs.MATH 136 Calculus I 4 hrs.MATH 137 Calculus II 4 hrs.PHYS 255/256 Physics I/Lab 4 hrs.PHYS 265 Physics II 4 hrs.CS 239 Problem Solving Comp Tech 3 hrs.**HIST 119 or 120 Western Civilization 3 hrs.** | **Proposed****Academic Standards for the WKU/UofL Joint Electrical Engineering Program** Students are admitted as pre-major in Electrical Engineering. In order to transition from the pre-major to major and to graduate with a degree in Electrical Engineering, students must complete the following courses **earning** a grade of “C” or better. in each course.**EE 101 EE Design I 1 hr.**  **or**EE 175 University Experience – EE 2 hrs.EE 180 Digital Circuits 4 hrs.**EE 210 Circuits & Networks I 3.5 hrs.**ENG 100 Composition 3 hrs.COMM 145or161 Public Speaking 3 hrs.MATH 136 Calculus I\* 4 hrs.MATH 137 Calculus II\* 4 hrs.PHYS 255/256 Physics I/Lab\* 4 hrs.PHYS 265 Physics II\* 4 hrs.CS 239 Problem Solving Comp Tech 3 hrs.\*Older versions of Calculus and Physics are allowed (MATH 126, MATH 227, PHYS 250/251, PHYS 260/261) |
|  |  |

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

* EE students will no longer be required to take both MATH 307 and MATH 450 if they do not take MATH 350.
* Topics in PHYS 440 are an acceptable substitute for EE 473. This flexibility will assist students double majoring in physics and electrical engineering.
* EE students will be encouraged to take ENGR 175 University Experience for Engineers. Students will be allowed to take UC 175 and transfers will not be required to take a University Experience course.
* EE students will be required to take at least 6 hours from a list of science and engineering electives which include EM 221 (or EM 222) and ME 365 among other appropriate courses.

* Modify the standards required to transition from being an Electrical Engineering – Prep major to an Electrical Engineering major.

The design experiences included in EE 101 or EE 175 are essential for students being admitted into the EE Program.

EE 210 has been added to the list of courses required to transition from an EE pre-major to an EE major because success in EE 210 is vital for an EE major. Students who successfully complete EE 210 are likely to graduate with an EE degree.

HIST 119 or HIST 120 has been removed from the list of courses required to transition from an EE pre-major to an EE major. It is acceptable for EE students to fulfill this general educational requirement at any point in their undergraduate experience.

A minimum GPA of 2.5 is no longer required to transition from an EE pre-major to an EE major. The EE program has no data to confirm that a minimum GPA of 2.5 in pre-major courses guarantees success. The EE faculty prefer that a “C” or better be required in these courses.

**5. Proposed term for implementation and special provisions:** Fall 2011

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

Department of Engineering 8 February 2011

 Ogden College Curriculum Committee 3 March 2011

 Undergraduate Curriculum Committee

 University Senate

**Attachment: Program Inventory Form**

Proposal Date: February 11, 2011

**Ogden College of Science and Engineering**

**Department of Geography and Geology**

**Proposal to Revise a Program**

**(Action Item)**

Contact Person: David Keeling (david.keeling@wku.edu) 745-4555

**1. Identification of program:**

* 1. Current program reference number: 363
	2. Current program title: Environmental Studies Minor
	3. Credit hours: 25

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

* Revise the program structure to recognize new core and elective options.

**3. Detailed program description:**

|  |  |
| --- | --- |
| *Requirements****:*** The environmental studies minor consists of 25 semester hours including a 13 hour core and 12 hours of electives.A**.** The core of the curriculum is founded on the selection of one of the following courses intended to provide an overview of the environmental field: ENV 280, PH 280, CHEM 280, GEOG 280, GEOL 280.These courses present a common body of basic environmental science and its applications but with different emphases, allowing a student to select that which most closely parallels his/her individual interests. The selected course should be taken during the fall semester of the second year and no later than the fall semester of the third year.B**.** The following course illuminates the relationship of environmental issues to social science: ECON 202.C**.** The capstone of the program is the senior environmental seminar to be taken in the spring semester of the final year. The senior seminar will be offered on a rotating basis by the several departments of Ogden College participating in the minor program. The course is cross-listed in each of those departments course listings as number 486.D**.** The remainder of the core consists of these courses: ENV 495 and ENV 460. These courses should be taken during the final year of the minor.All students pursuing the environmental studies minor must complete at least three semester hours of chemistry with a separate laboratory course.The remaining hours of the minor are to be selected from the list of courses identified from the offerings of the several science departments. The specific courses to be taken will be determined after consultation with one of the environmental studies minor advisors. A sufficient number of offerings has been identified to allow the selection of a sequence which corresponds closely to the students interests.Elective courses (selected from courses outside of the major department) 12-14 hours:Department of Agriculture [AGRO 350 (4 hours); AGRO 454 (3 hours)]; Department of Biology [BIOL 315 (4 hours); BIOL 207/208 (3 hours & 1 hour lab); BIOL 420 (3 hours); BIOL 472 (4 hours)]; Department of Chemistry [CHEM 314 (5 hours); CHEM 330 (5 hours); CHEM 432 (3 hours)]; Department of Geography and Geology [GEOG 100 (3 hours); GEOL 102 or GEOL 111 (3 hours) with lab GEOL 113 (1 hour); GEOG 121 (3 hours); GEOG 328 (3 hours); GEOL 415 (3 hours); GEOL 310)]; Department of Public Health [PH 384 (3 hours); ENV 360 (3 hours) ENV 410 (3 hours); ENV 480 (3 hours) ENV 360 (3 hours). | ***Requirements:* The environmental studies minor requires 25 semester hours, including a 13-hour core and 12 hours of electives. Students must have at least 12 hours of coursework from outside their major program.****Core Courses: 13 hours****A. Introduction to Environmental Science 3** **ENV 280, PH 280, CHEM 280, or GEOG 280****These courses present basic environmental concepts and their applications but with different emphases, allowing a student to select that which most closely parallels his/her individual interests**. **B. Biological Concepts: Evolution, Diversity, Ecology 4****BIOL 122/123 (with lab)** **The selected courses above should be taken during the sophomore year and no later than the fall semester of the third year.****C. Earth Science course 3** **GEOG 100 or GEOG 121 or GEOL 102 or GEOL 111** **These courses present a common body of****basic earth science but with different emphases.****D. Practicum Experience 3****BIOL 369 or 389 (3)****Cooperative Education in Biology** **OR GEOG 495 (3)****Supervised Practicum****OR CHEM 489 (3)****Cooperative Education in Chemistry****OR ENV 475 or 491 (3)****Special topics/Practicum****An approved capstone project, supervised practicum, or cooperative education experience in the senior year.****Elective Courses: 12 hours****The remaining 12 hours of the minor are to be selected from the list of courses identified from the offerings of several departments. The specific courses to be taken will be determined after consultation with one of the environmental studies minor advisors. A sufficient number of offerings has been identified to allow the selection of a sequence that corresponds closely to the students interests. At least two departments must be represented in the 12 hours of elective coursework.****Department of Agriculture:****AGRO 350/351 Soils (3) and Soils Lab (1) AGRO 454 Soil Management (3)****Department of Architectural and Manufacturing Sciences:****AMS 470 Land Development (3)****Department of Biology:** **BIOL 207/208 Microbiology (3) and Lab (1)****BIOL 315 Ecology (4.5)** **BIOL 420 Toxicology (3 hours)****BIOL 446 Biochemistry (3) and Lab (2)****Department of Chemistry:****CHEM 314 Intro Organic Chemistry (5)****CHEM 446 Biochemistry (3) and Lab (2)****Department of Engineering:****CE 351 Intro Environmental Engineering (3)****Department of Geography and Geology:****GEOG 328 Biogeography (3)****GEOG 427 Water Resources (3)****GEOG 455 Global Environmental Change (3)****GEOG 474 Environmental Planning (3)****GEOL/GEOG 310 Global Hydrology (3)****GEOL 415 Environmental Geology (3)****Department of Public Health:****ENV 375 Water Resources (3)****ENV 460 Environmental Management (3)****ENV 480 Hazardous and Solid Waste (3)****PH 385 Environmental Health (3)****Department of Philosophy and Religion****RELS 408 Religion and Ecology (3)** |

**4. Rationale for the proposed program change:** As WKU and the wider community

 focus increasingly on issues of sustainability and environmental awareness, students seek

 additional opportunities to develop skills in the general area of environmental studies.

 The existing minor is being revised to better suit the needs of students majoring within

 Ogden College, but will also be attractive to students majoring in other disciplines

 beyond Ogden. The revised program will focus more specifically on the physical science

 aspects of the environment, while the Minor in Sustainability focuses more specifically

 on principles, theories, ethics, and empirical case studies.

**5. Proposed term for implementation and special provisions (if applicable):** Fall 2011

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

Department of Geography and Geology: \_\_\_\_2/23/2011\_\_\_\_\_\_\_

 Ogden Curriculum Committee \_\_\_\_3/3/2011\_\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Program Inventory Form**

Proposal Date: February 11, 2011

**Ogden College of Science and Engineering**

**Department of Geography and Geology**

**Proposal to Revise a Program**

**(Action Item)**

Contact Person: Chris Groves, Chris.groves@wku.edu, 5-5974

**1. Identification of program:**

* 1. Current program reference number: 674
	2. Current program title: Geography
	3. Credit hours: 36

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

* Add a new concentration in karst geosciences.
* Change concentration title from Environment and Sustainable Development to Environmental Planning and Resource Management.
* Add electives to two concentrations: GEOG 459 Physical Hydrology and GEOG 461 Karst Environments.

**3. Detailed program description:**

|  |  |
| --- | --- |
|  | **Karst Geoscience****■ Foundation Requirements 13 hours****GEOG 100 or GEOL 102**  **or GEOL 111 Physical Geo. (3)****GEOG 110 World Regional Geog. (3)****GEOG 280 Environmental Science (3)** **GEOG 475 Mammoth Cave Karst (3)**  **(Summer Field Course)****GEOG 499 Professional Development (1)****■ Thematic Requirements 9-10 hours****GEOG 310 Hydrology (3)** **OR****GEOG 459 Physical Hydrology (3)****GEOG 461 Karst Environments (3)** **GEOG 420 Geomorphology (4)** **OR****GEOG 475 Mammoth Cave Karst (3)**  **(Summer Field Course)****■ Technique Requirements 10 hours****GEOG 300 Research (3)****GEOG 316 Foundations GIS (4)****GEOG 391 Data Analysis (3)** **■ Approved Electives 3-4 hours****GEOG 208 Floods and Droughts (1)****GEOG 209 Natural Disasters (1)****GEOG 317 GIS (4)****GEOG 414 Remote Sensing (4)****GEOG 417 GIS Analysis (3)****GEOG 419 GIS Applications (3)****GEOG 444 Environmental Ethics (3)****GEOG 452 Field Methods (3)****GEOG 455 Global Env. Change (3)****GEOG 471 Resource Management (3)****GEOG 474 Env. Planning (3)****GEOG 489 Env. Law & Policy (3)****GEOL 415 Env. Geology (3)****GEOL 445 Aqueous Geochemistry (3)****Program Total 36 hours****Additional requirements: MATH 136, CHEM 120, and BIOL 120 OR PHYS 201** |
| Cultural Geography■ Foundation Requirements 14 hoursGEOG 100 or GEOL 102 Physical (3)GEOG 110 World Regional Geog. (3)GEOG 330 Intro to Cultural (3) GEOG 430 Topics in Cultural (3) GEOG 475 or 495 Practicum or Research (1) GEOG 499 Professional Development (1)■ Regional Requirements 6 hoursChoose two courses from:GEOG 200 Latin America (3)GEOG 360 North America (3)GEOG 451 Kentucky (3)GEOG 454 Middle America (3)GEOG 462 South America (3)GEOG 464 Europe (3)GEOG 465 Asia (3)GEOG 466 Africa (3)GEOG 467 Middle East (3)■ Thematic Requirements 6 hoursChoose two courses from:GEOG 350 Economic (3)GEOG 378 Food & Culture (3)GEOG 480 Urban (3)GEOG 481 Tourism (3)■ Technique Requirements 10 hoursGEOG 300 Research (3)GEOG 316 Foundations GIS (4)GEOG 391 Data Analysis (3) Program Total 36 hoursAdditional requirement: MATH 118 (or MATH 116 and MATH 117) | Cultural Geography■ Foundation Requirements 14 hoursGEOG 100 or GEOL 102 Physical (3)GEOG 110 World Regional Geog. (3)GEOG 330 Intro to Cultural (3) GEOG 430 Topics in Cultural (3) GEOG 475 or 495 Practicum or Research (1) GEOG 499 Professional Development (1)■ Regional Requirements 6 hoursChoose two courses from:GEOG 200 Latin America (3)GEOG 360 North America (3)GEOG 451 Kentucky (3)GEOG 454 Middle America (3)GEOG 462 South America (3)GEOG 464 Europe (3)GEOG 465 Asia (3)GEOG 466 Africa (3)GEOG 467 Middle East (3)■ Thematic Requirements 6 hoursChoose two courses from:GEOG 350 Economic (3)GEOG 378 Food & Culture (3)GEOG 480 Urban (3)GEOG 481 Tourism (3)■ Technique Requirements 10 hoursGEOG 300 Research (3)GEOG 316 Foundations GIS (4)GEOG 391 Data Analysis (3) Program Total 36 hours* Additional requirement: MATH 118 (or MATH 116 and MATH 117)
 |
| Environment and Sustainable Development■ Foundation Requirements 13 hoursGEOG 100 or GEOL 102 Physical (3)GEOG 110 World Regional Geog. (3)GEOG 280 Environment (3)GEOG 475 or 495 Practicum or Research (3) GEOG 499 Professional Development (1)■ Thematic Requirements 9 hoursGEOG 328 Biogeography (3)GEOG 471 Natural Resources (3)GEOG 474 Env. Planning (3)■ Technique Requirements 10 hoursGEOG 300 Research (3)GEOG 316 Foundations GIS (4)GEOG 391 Data Analysis (3) ■ General Electives 4 hoursGEOG 208, 209, 310, 317, 350, 380 Sustainable Development, 414, 417, 419, 444, 452, 455, 487, GEOL 415Program Total 36 hoursAdditional requirements: MATH 118 (or MATH 116 and MATH 117) and one Ethics course: PHIL 320 or GEOG 444 | **Environmental Planning and Resource Management**■ Foundation Requirements 13 hoursGEOG 100 or GEOL 102 Physical (3)GEOG 110 World Regional Geog. (3)GEOG 280 Environment (3)GEOG 475 or 495 Practicum or Research (3) GEOG 499 Professional Development (1)■ Thematic Requirements 9 hoursGEOG 328 Biogeography (3)GEOG 471 Natural Resources (3)GEOG 474 Env. Planning (3)■ Technique Requirements 10 hoursGEOG 300 Research (3)GEOG 316 Foundations GIS (4)GEOG 391 Data Analysis (3) ■ General Electives 4 hoursGEOG 208, 209, 310, 317, 350, 380, 414, 417, 419, 444, 452, 455, **459, 461,** 487, GEOL 415Program Total 36 hoursAdditional requirements: MATH 118 (or MATH 116 and MATH 117) and one Ethics course: PHIL 320 or GEOG 444 |
| Land, Weather, and Climate■ Foundation Requirements 13 hoursGEOG 100 or GEOL 102 or GEOL 111 Physical/Earth (3)GEOG 110 World Regional Geog. (3)GEOG 121 Meteorology (3) GEOG 475 or 495 Practicum or Research (3) GEOG 499 Professional Development (1)■ Thematic Requirements 7 hoursGEOG 422 Physical Climatology (4)GEOG 424 or 426Weather (3)■ Technique Requirements 10 hoursGEOG 300 Research (3)GEOG 316 Foundations GIS (4)GEOG 391 Data Analysis (3) ■ General Electives 6 hoursGEOG 122, 222, 310, 325, 328, 414, 420, 424 or 426, 482, 455, 471, GEOL 311, 325Program Total 36 hoursAdditional Requirements: MATH 118 (or 116/117), PHYS 201 | Land, Weather, and Climate■ Foundation Requirements 13 hoursGEOG 100 or GEOL 102 or GEOL 111 Physical/Earth (3)GEOG 110 World Regional Geog. (3)GEOG 121 Meteorology (3) GEOG 475 or 495 Practicum or Research (3) GEOG 499 Professional Development (1)■ Thematic Requirements 7 hoursGEOG 322 Global Climate Systems (4**)**GEOG 424 or 426Weather (3)■ Technique Requirements 10 hoursGEOG 300 Research (3)GEOG 316 Foundations GIS (4)GEOG 391 Data Analysis (3) ■ General Electives 6 hoursGEOG 122, 222, 310, 325, 328, 414, 420, 424 or 426, 455, **459, 461**, 471, 482, GEOL 311, 325Program Total 36 hoursAdditional Requirements: MATH 118 (or 116/117), PHYS 201 |
| Planning and GIS■ Foundation Requirements 13 hoursGEOG 100 or GEOL 102 Physical (3)GEOG 110 World Regional Geog. (3)GEOG 240 Planning (3) GEOG 475 or 495 Practicum or Research (3) GEOG 499 Professional Development (1)■ Thematic Requirements 9 hoursGEOG 317 GIS (3)GEOG 474 Env. Planning (3)GEOG 484 Advanced Plan (3)■ Technique Requirements 10 hoursGEOG 300 Research (3)GEOG 316 Foundations GIS (4)GEOG 391 Data Analysis (3) ■ General Electives 4 hoursGEOG 350, 360, 414, 416, 417, 419, 423, 451, 477, 480, 487, 488, 497Program Total 36 hoursAdditional Requirements: MATH 118 (or MATH 116 and 117) AMS 163, CIS/CS 226 or CS 230 | Planning and GIS■ Foundation Requirements 13 hoursGEOG 100 or GEOL 102 Physical (3)GEOG 110 World Regional Geog. (3)GEOG 240 Planning (3) GEOG 475 or 495 Practicum or Research (3) GEOG 499 Professional Development (1)■ Thematic Requirements 10 hoursGEOG 317 GIS (4)GEOG 474 Env. Planning (3)GEOG 484 Advanced Plan (3)■ Technique Requirements 10 hoursGEOG 300 Research (3)GEOG 316 Foundations GIS (4)GEOG 391 Data Analysis (3) ■ General Electives 3 hoursGEOG 350, 360, 414, 416, 417, 419, 423, 451, 477, 480, 487, 488, 497Program Total 36 hoursAdditional Requirements: MATH 118 (or MATH 116 and 117) AMS 163, CIS/CS 226 or CS 230 |
| Geography Honors* Program Requirements 30 hours

GEOG 100 (Honors), 110 (Honors), 300, 316, 391, HONS 300, HONS 301, HEEC courses (10 hours), 499* Program Electives 6 hours

HONS 403 Thesis for 6 hours, or 475 or 495* Program Total 36 hours

Additional requirements: MATH 118 (or MATH 116 and MATH 117) and one Ethics course: PHIL 320 or GEOG 440 | Geography Honors* Program Requirements 30 hours

GEOG 100 (Honors), 110 (Honors), 300, 316, 391, HONS 300, HONS 301, HEEC courses (10 hours), 499* Program Electives 6 hours

HONS 403 Thesis for 6 hours, or 475 or 495* Program Total 36 hours

Additional requirements: MATH 118 (or MATH 116 and MATH 117) and one Ethics course: PHIL 320 or GEOG 440 |

**4. Rationale for the proposed program changes:** WKU currently does not have a physical geography program focused on the special issues involved in karst landscapes. The proposed concentration will be unique in the U.S. It will position the department to attract a new group of students to WKU and to take advantage of our unique location near Mammoth Cave and our unique group of karst specialty scientists. This new concentration will promote research, teaching, and outreach synergies throughout the university and across the country. Additionally, it will balance the geography major and provide coursework that has been requested by many students, alumni, and other regional stakeholders. This new concentration will be closely linked to the Hoffman Environmental Research Institute and the Center for Cave and Karst Studies.

The existing environmental concentration is being renamed to distinguish it from the new Sustainability Minor. The new electives are being added to integrate the new karst geoscience courses into the program as a whole.

**5. Proposed term for implementation and special provisions (if applicable):** Fall 2011

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

Department of Geography and Geology \_\_\_\_\_2/23/2011\_\_\_\_\_\_

 Ogden Curriculum Committee \_\_\_\_\_3/3/2011\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Program Inventory Form**

Proposal Date: January 13, 2011

**Ogden College of Science and Engineering**

**Department of Mathematics and Computer Science**

**Proposal to Revise A Program**

**(Action Item)**

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

**1. Identification of program:**

* 1. Current program reference number: 728 and 528
	2. Current program title: Major in Mathematics
	3. Credit hours: 34 hours (728); 48 hours (528)

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

* Increase the number of required credit hours for the certifiable major 728 from 34 to 36.
* Increase the number of required credit hours for the non-certifiable major 728 from 34 to 39.
* Increase the number of required credit hours for the extended major 528 from 48 to 51.
* Change the intended goal of non-certifiable major 728.
* Specify the intended goal of non-certifiable major 528.
* Require 12 credit hours of advisor approved supporting courses for non-certifiable major 728.
* Require Elementary Logic, PHIL 215 or Digital Circuits, EE 180 for all 728 and 528 majors.
* Delete the list of sequences for the non-certifiable majors 728 and 528.
* Create lists of limited electives and less limited electives to replace sequences in the non-certifiable majors 728 and 528.
* Offer choices of specific areas in mathematics for non-certifiable major 528.
* Add MATH 431 to the list of required courses for the non-certifiable math major 528.
* Add MATH 370 to the list of elective courses for the non-certifiable math majors 728 and 528.
* Add MATH 473 to the list of elective courses for the non-certifiable math majors 728 and 528.
* Replace CS 180 or 230 with CS 180 or 170 for option 2 major.
* Require that for each mathematics course, all mathematics courses listed as prerequisite for that course must have been completed with a grade of C or better.

**3. Detailed program description:**

**Current Program Proposed Program**

|  |  |
| --- | --- |
| Major in Mathematics A major in mathematics provides a Bachelor of Arts degree and requires either a minimum of **3**4 semester hoursfor a general major with a minor or second major (reference number 728) or a minimum of **48** semester hours for an extended major (reference number 528). Students who wish to declare a 728 or 528 mathematics major will initially be designated as “seeking admission” until the following requirements have been satisfied: * Complete MATH 136, MATH 137, and MATH 307 or MATH 310, with a grade of C or better in each course.
* Have an overall GPA of at least 2.4 in mathematics program courses (MATH 136 and above) completed prior to admission**.**

The general major (728) offers two options: (1) **Major for Employment in Industry and/or Graduate Studies in Mathematics**; (2) Major Certifiable for Teaching Secondary Level Mathematics.  The extended major (528) offers only the first option.  Option 1 students are required to complete both CS 180 and CS 181.  Option 2 students are required to complete eitherCS 180or **230**. Option 1: **Major for Employment in Industry and/or Graduate Studies in Mathematics** (A) General Major (728): The student must complete a minimum of **34** hours of mathematics with a minor or second major giving a total of at least **54** hours (**48** unduplicated) with the following requirements: 1. MATH 136, 137, 237, 307, 310, 317, 337, 498.
2. **At least one of the sequences:** MATH 317-417; 331-435; 337-431; 337-450; 382-482; 405-406.
3. **At least 6 hours of 400-level mathematics other than** MATH 475.

**Other acceptable courses for the general major are** MATH 275 (up to 3 hours), 305, 315, 323, 331, 382, 398 (up to 3 hours), 405, 406, 415, 417, 423, 431, 432, 435, 439, 450, 470, 475 (up to 6 hours), 482, and STAT 301.(B) Extended Major (528): The student must complete a minimum of **48** hours of mathematics with the following requirements: 1. MATH 136, 137, 237, 307, 310, 317, 337, 498.
2. **At least one of the sequences: MATH 317-417; 331-435; 337-431; 337-450; 382-482; 405-406.**
3. At least 12 hours of 400-level mathematics.

**Other acceptable courses for the extended major are** MATH 275 (up to 3 hours), 305, 315, 323, 331, 382, 398 (up to 3 hours), 405, 406, 409, 415, 417, 423, 431, 432, 435, 439, 450, 470, 475 (up to 6 hours), 482, and STAT 301.(B) Extended Major (528): The student must complete a minimum of **48** hours of mathematics with the following requirements: 1. MATH 136, 137, 237, 307, 310, 317, 337, 498.
2. **At least one of the sequences:** MATH 317-417; 331-435; 337-431; 337-450; 382-482; 405-406.
3. **At least 12 hours of 400-level mathematics**.

**Other acceptable courses for the extended major are** MATH 275 (up to 3 hours), 305, 315, 323, 331, 382, 398 (up to 3 hours), 405, 406, 409, 415, 417, 423, 431, 432, 435, 439, 450, 470, 475 (up to 6 hours), 482, and STAT 301. Option 2: Major Certifiable for Teaching Secondary Level Mathematics(reference number 728): The student must complete a minimum of **34** hours of mathematics with a second major in Science and Mathematics Education (SMED). The following courses are requirements: 1. MATH 136, 137, 237, 304, 307, 310, 317, 323, 498; STAT 301. Before the professional semester, the student must complete each ofthesecourses with a grade of “C” or better and achieve a GPA of at least 2.5 in mathematics.
	1. **At least** 3 hours of 400-level mathematics from the following list:  MATH 405, 406, 409, 415, 417, 421, 423, 431**,** 432, 435, 439, 450, 470, 482.
 | Major in Mathematics A major in mathematics provides a Bachelor of Arts degree and requires either a minimum of **36-39** semester hours for a general major with a minor or second major (reference number 728) or a minimum of **51** semester hours for an extended major (reference number 528). **Note: All mathematics courses listed as prerequisites for other courses must have been completed with a grade of C or better**. Students who wish to declare a 728 or 528 mathematics major will initially be designated as “seeking admission” until the following requirements have been satisfied: * Complete MATH 136, MATH 137, and MATH 307 or MATH 310, with a grade of C or better in each course.
* Have an overall GPA of at least 2.4 in mathematics program courses (MATH 136 and above) completed prior to admission**.**

The general major (728) offers two options: (1) **Non-certifiable Major in Mathematics**; (2) Major Certifiable for Teaching Secondary Level Mathematics.  The extended major (528) offers only the first option.  Option 1 students are required to complete both CS 180 and CS 181.  Option 2 students are required to complete either **CS 170** or 180. Option 1: **Non-certifiable Major in Mathematics**.(A) General Major (728): **To prepare for employment in industry**, the student must complete a minimum of **39** hours of mathematics with a minor or second major, giving a total of at least **59** hours (**53** unduplicated) with the following requirements: 1. MATH 136, 137, 237, 307, 310, 317, 337, 498.
2. **Two courses from** MATH 405, 406, 415, 417, 423, 431, 432, 435, 439, 450, 470, **473**, 482.
3. **Six elective hours from** MATH 275 (up to 3 hours), STAT 301, MATH 305, 315, 323, 331, **370**, 382, 398 (up to 3 hours), 405, 406, 415, 417, 423, 432, 435, 439, 450, 470, 475 (up to 6 hours), 482.
4. **Students may take certain 500-level mathematics courses for undergraduate credit with the approval of the Dept. Head in place of courses listed in items 2 or 3.**
5. **In addition, 12 credit hours of supporting courses from the Ogden College of Science and Engineering or Gordon Ford College of Business (courses such as mathematics, statistics, sciences, engineering, economics, finance and accounting) are required. These courses must be approved by the mathematics and computer science department head. These hours will not count toward a first minor nor usually toward a second major.**
6. **Also required is Elementary Logic PHIL 215, or Circuit Design, EE 180.**
7. **Note: This major is not intended to prepare students adequately for graduate mathematics. Students intending to seek a graduate degree should pursue major 528.**

(B) Extended Major (528): **To prepare for graduate study in mathematics**, the student must complete a minimum of **51** hours of mathematicswith the following requirements: 1. MATH 136, 137, 237, 307, 310, 317, 337, **431**, 498.
2. **Emphasis in** **one of the following areas B1, B2 or B3.**

**B1. Fundamentals of Analysis and Discrete Mathematics.*** + 1. MATH417, 439, 450.
		2. **Two courses from** MATH 315, 323, 415, 423, 432, **473**.
		3. **Six additional elective hours from** MATH 275 (up to 3 hours), STAT 301, MATH 305, 315, 323, 331, **370**, 382, 398 (up to 3 hours), 405, 406, 409, 415, 423, 432, 435, 470, **473**, 475 (up to 6 hours), 482.

**B2. Fundamentals of Applied Mathematics.*** 1. MATH 331, **370**, 382, 405.
	2. **Two courses from** MATH 305, 406, 435, 470, 482.
	3. **Three credit hours from** MATH 275, STAT 301, MATH 305, 315, 323, 398, 406, 409, 415, 417, 423, 432, 435, 439, 450, 470, **473**, 475, 482.

**B3. Fundamentals of Mathematical Studies.*** + 1. MATH 450.
		2. **Two courses from** MATH 405, 406, 409, 415, 417, 423, 432, 435, 439, 470, **473**, 482.
		3. **Twelve additional electives from** MATH 275 (up to 3 hours), STAT 301, MATH 305, 315, 323, 331, **370**, 382, 398 (up to 3 hours), 405, 406, 409, 415, 423, 432, 435, 470, **473**, 475 (up to 6 hours), 482.

**3. Students may take certain 500-level mathematics courses for undergraduate credit in place of courses listed in items B1i, B1ii, B2i, B2ii, B3i, or B3ii with the approval of the mathematics and computer science Dept. Head. No minor or a second major for the extended major is required.**Option 2: Major Certifiable for Teaching Secondary Level Mathematics(reference number 728): The student must complete a minimum of **36** hours of mathematics with a second major in Science and Mathematics Education (SMED). The following courses are requirements: 1. MATH 136, 137, 237, 304, 307, 310, 317, 323, 498; STAT 301. Before the professional semester, the student must complete each ofthesecourses with a grade of “C” or better and achieve a GPA of at least 2.5 in mathematics.
2. Three hours of 400-level mathematics from the following list:  MATH 405, 406, 409, 415, 417, 421, 423, 435, 439, 450, 470, 431432, 482.

**3. Also required is Elementary Logic PHIL 215, or Circuit Design EE 180.** |

**4. Rationale for the proposed program changes:**

* When we decreased the number of hours in the calculus sequence, we created a situation in which students could complete the major by taking MATH 398 for one hour of credit. We believe students would benefit more by enrolling in a one 3-credit upper division mathematics course. Hence, we propose to increase the number of credit hours in the certifiable major (728) by 2 hours.

* Two of the 5 extra credit hours in the non-certifiable major 728 are added for the same reason as above. The other 3 credit hours are added to this major to increase the number of elective courses so the students can explore other areas of mathematics.
* We added 3 extra hours to strengthen the program for our students pursuing a graduate degree, as is the intended goal of this major.
* Based on our past experience, the current non-certifiable major 728 does not adequately prepare our students for graduate work or employment in industry. However, by requiring supporting course work the students in this major should be better equipped to start a career in industry.
* Based on our experience the extended major 528 does lay a firm foundation for graduate studies in mathematics.
* The added 12 hours of supporting course work should enable our students to launch a more successful bid for work in industry. This is also done in other institutions in our close proximity (e.g., Murray State and Middle Tennessee State).
* Based on our experience the students will better understand proofs in mathematics if they have some background in the principles of formal logical argument.
* The intention of the two types of electives is to build a mathematical foundation and still allow flexibility in the student’s choices.
* Since the intended goal of major 528 is for graduate school preparation, students will benefit from an early exposure to specific areas in mathematics.
* MATH 431 (Intermediate Analysis) together with the new course MATH 337 (Elements of Real Analysis) will provide our students in major 528 with a good foundation necessary for graduate work.
* MATH 370 (Applied Techniques in Mathematics) is a new course with enhanced topics to serve both engineering students and mathematics majors and minors. We believe it is a worthwhile course to include in the list of electives.
* The newly created course MATH 473 (Introduction to Graph Theory) contains an attractive list of topics that will be beneficial to the mathematical experience of our majors.
* Based on our past experience, students with grades C or better in prerequisite courses perform more successfully in subsequent courses.

**5. Proposed term for implementation and special provisions**: Fall 2011.

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

 Mathematics and computer Science: \_\_January 21, 2011\_\_

 OCSE Curriculum Committee \_\_March 3, 2011\_\_\_\_

 Professional Education Council \_\_March 16, 2011\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Program Inventory Form**

Proposal Date: 11/05/2010

**Ogden College of Science and Engineering**

**Department of Mathematics and Computer Science**

**Proposal to Revise a Program**

**(Action Item)**

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

**1. Identification of program:**

* 1. Current program reference number: 341
	2. Current program title: Minor in Computer Science
	3. Credit hours: 18

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

* Change course number: CS 338 🡪 CS 280.
* Add CS 251 to list of required CS courses.
* Add **PHIL 215** to the general requirements.
* Change required number of CS hours from 18 to 23.
* Require all elective courses to be at 300 level or above.

**3. Detailed program description:**

|  |  |
| --- | --- |
| **Current requirements for a Minor in Computer Science**  | **Proposed requirements for a Minor in Computer Science** |
| **General:** **1) 18 hours of Computer Science are required****2) MATH 119, 122, or 136 is required****3) All CS courses counting towards the CS program minor must be completed with a C or better.** | **General:** **1) 23 hours of Computer Science are required****2) MATH 119, 122, or 136, and PHIL 215 are required****3) All CS courses counting towards the CS program minor must be completed with a C or better.** |
| Required CS courses: Completion of the following 11 credit hours : CS 180, 181, and **338** | **Required CS courses:** Completion of the following 11 credit hours: CS 180, 181, and **251 or** **280** |
| Completion of an additional 7 hours of CS electives at the **200** level or above including **6** hours at the 300 level or higher. | Electives:Completion of an additional **12** hours of CS courses at the **300** level or higher. |

1. **Rationale for the proposed program change:**
* The change in course number reflects a previously approved curriculum change in the Mathematics and Computer Science Department.
* Adding CS 251 to the required courses will provide students more flexibility for their course selection.
* Elementary logic provides a good foundation for CS courses.
* The increase in the number of required CS courses at the 300 level will result in a stronger minor for students.

**5. Proposed term for implementation and special provisions (if applicable):**  Fall 2011

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

Mathematics and Computer Science \_\_\_\_\_1/21/2011\_\_\_\_\_

Ogden College Curriculum Committee \_\_\_\_\_2/3/2011\_\_\_\_\_\_

University Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Program Inventory Form**

Proposal Date:2/4/2010

**Ogden College of Science and Engineering**

**Department of Chemistry**

**Proposal to Create a New Minor Program**

**(Action Item)**

Contact Person: Kevin Williams, Kevin.williams@wku.edu, 5-8899

**1. Identification of program:**

* 1. Program title: Minor in Nutritional and Food Chemistry
	2. Required hours in minor program: 18
	3. Special information: N/A
	4. Catalog description: The minor in nutritional and food chemistry is intended for students who wish to understand nutritional principles from a molecular level. The core courses provide a background in fundamental principles of general chemistry, organic chemistry, and biochemistry. Students can select appropriate electives from a variety of departments as appropriate.

**2. Rationale:**

* 1. Reason for developing the proposed minor program: We propose addition of a minor for students who are interested in the nutritional and food aspects of chemistry. The growth of the food science area in Kentucky and at WKU may lead to an increased interest in food and/or nutritional chemistry by students from departments other than chemistry, such as Agriculture or Architectural and Manufacturing Sciences. This minor will be established with existing courses in the chemistry department as well as electives from existing courses in other departments to focus on nutritional or food science aspects according to their interests.
	2. Projected enrollment in the proposed minor program: Approximately 5-10 students per year initially; typically 60-70 students enroll in CHEM 107 each year, and this estimate assumes that ~10% will choose the minor.
	3. Relationship of the proposed minor program to other programs now offered by the department: The department offers a major and minor in chemistry but neither in nutritional and food chemistry. There will be no overlap between the standard chemistry minor and the proposed minor.
	4. Relationship of the proposed minor program to other university programs: The College of Health and Human Services offers a Nutrition and Dietetics major; the CHEM 105/106/107/108 sequence is required as part of that major, though these students do not need a minor and thus will likely not participate. Architecture and Manufacturing Sciences offers a major in Advanced Manufacturing with a Food Automation and Manufacturing concentration; these students may be interested in the nutritional and food chemistry minor.
	5. Similar minor programs offered elsewhere in Kentucky and in other states (including programs at benchmark institutions): A nutritional chemistry minor would be unique in the state and amongst our benchmarks to our knowledge. The University of Kentucky does have an undergraduate degree in Food Science through their College of Agriculture.
	6. Relationship of the proposed minor program to the university mission and objectives: The food processing industry is and will continue to be an important economic driver in the state of Kentucky. WKU has partnered with Owensboro to establish lab space at the Centre for Business and Research for food science applied research. Given the university's focus on preparing students for engaged and applied research opportunities and serving our constituencies, the minor should be attractive to students interested in this growth area.

**3. Objectives of the proposed minor:** Upon completion of the minor students will:

* Understand the molecular aspects of food and nutrition
* Master the fundamentals of general chemistry, organic chemistry and biochemistry that are relevant to food and nutrition
* Gain specific mastery of agricultural, manufacturing or nutritional aspects of chemistry

**4. Curriculum:** The minor in nutritional chemistry will require a minimum of 18 hours, including 12 hours of required courses and at least 6 hours of elective courses to be selected in consultation with an advisor.

Required courses: The following 12 hours of courses are required:

CHEM 105: Fundamentals of General Chemistry, 3 hours

CHEM 106: Fundamentals of General Chemistry Laboratory, 1 hour

CHEM 107: Fundamentals of Organic Chemistry, 3 hours

CHEM 108: Fundamentals of Organic Chemistry Laboratory, 1 hour

CHEM 304: Biochemistry for the Health Sciences, 4 hours

Electives: Students must choose at least 6 hours from the following electives:

CHEM 299: Introduction to Chemistry Research, 1-3 hours

CHEM 314: Introduction to Organic Chemistry, 5 hours

CFS 111: Human Nutrition, 3 hours

CFS 261: Advanced Nutrition, 3 hours

AMS 301: Science of Food Processing, 3 hours

AMS 303: Food Laws and Regulations, 3 hours

AMS 352: Food Processing: Unit Operations, 3 hours

AMS 381: Food Quality Assurance, 3 hours

AMS 443: Food Packaging, 3 hours

AMS 462: Commodity Food Processing, 3 hours

BIOL 207: Microbiology, 3 hours

BIOL 208: Microbiology laboratory, 1 hour

AGEC 468: World Food Development, 3 hours

At least half of the credits must be at the upper division level.

**5. Budget implications:** No additional courses are required for this minor. We do not anticipate the enrollment in any classes would increase to a level requiring additional sections, and, thus, there should be no budget implications.

**6. Proposed term for implementation:** Fall 2011

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

Chemistry Department: \_ February 18, 2011\_\_

 OCSE Curriculum Committee \_March 3, 2011\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Program Inventory Form**

Proposal Date: 3/29/2010

**Ogden College of Science and Engineering**

**Department of Mathematics and Computer Science**

**Proposal to Create a New Certificate Program**

**(Action Item)**

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

Jonathan Quiton jonathan.quiton@wku.edu 745-2441

**1. Identification of program:**

* 1. Program title:

Certificate in Data Analysis using SAS®

* 1. Required hours in certificate program:

15 hours

* 1. Special information:

This certificate program is administered by the Mathematics Division of the Department of Mathematics and Computer Science in partnership with the SAS Institute and is intended for students who are interested in industry-based career opportunities in statistics and related fields.

* 1. Catalog description:

The Certificate in Data Analysis using SAS requires a minimum of 15 semester hours. This certificate is designed for a student seeking a career as a statistical programmer/analyst/consultant in a knowledge-based industry or in a research institution.

To be eligible for the program, the student must have completed MATH 136 (formerly MATH 126) or MATH 142 (or equivalent) with a grade of C or better. The student pursuing a Certificate in Data Analysis using SAS must complete a minimum of 12 credit hours of core statistics courses as follows:

 STAT 301, 330, 401, 402 (12 hours)

In addition, this student is required to take at least 3 credit hours of courses using SAS, selected from the following:

Any 300-level or higher STAT course using SAS, other than STAT 301, 330, 401, and 402

MATH 498 (Undergraduate Senior Project). Students are required to provide an electronic copy of their paper to the Statistics Education Committee of the Department of Mathematics and Computer Science to verify the use of SAS software

Any 300-level or higher course using SAS in another department, with prior approval from the Statistics Education Committee of the Department of Mathematics and Computer Science

**2. Rationale:**

* 1. Reason for developing the proposed certificate program:

The mandate for a certificate program in data analysis using SAS comes from an immediate need for students from many disciplines to learn and use statistical methods as implemented in a flexible and powerful computing platform such as SAS. SAS is one of the leading computing software packages used in various disciplines such as business, economics, finance, law, medicine, biology, meteorology, chemistry, physics, engineering, sports, education, sociology, psychology, history, and high-performance computing. With the vast amounts of data that are collected and produced on a daily basis, the demand for people skilled in analytical jobs using statistical methods and SAS is increasing. This certificate will expose students to many important topics in data analysis and SAS and provide them with useful and marketable skills. By design, the certificate program is intended for graduate, undergraduate, and non-degree seeking students as long as they meet the eligibility requirement.

* 1. Projected enrollment in the proposed certificate program:

This certificate program anticipates enrolling at least 10 students in the initial year and is expected to grow.

* 1. Relationship of the proposed certificate program to other programs now offered by the department

This program is the first certificate program in the Mathematics Division. It is possible that a degree-seeking student will get both a minor in applied statistics and the Certificate in Data Analysis using SAS if he/she meets the completion requirements of both programs.

* 1. Relationship of the proposed certificate program to other university programs:

This program is unique from other programs at the university.

* 1. Similar certificate programs offered elsewhere in Kentucky and in other states

 (including programs at benchmark institutions):

Kennesaw State University is the only university that currently offers a certificate in data analysis using SAS. Seven universities, including the University of Louisville, have a joint certificate program in data mining with SAS, three of which are at the graduate level.

* 1. Relationship of the proposed certificate program to the university mission and objectives:

The proposed certificate program is consistent with the objectives of the university. The program prepares students to be productive, engaged leaders in a global society and will attract talented students both regionally and nationally.

**3. Objectives of the proposed certificate:**

Upon completion of the certificate, students should be able to:

* design and implement commonly used experimental and sampling strategies;
* encode and manage SAS databases for analysis and report generation,
* statistically analyze data using SAS from a wide variety of disciplines;
* interpret SAS output and generate SAS reports understandable to target clients.

**4. Curriculum:**

**Eligibility Requirement**

* MATH 136 or MATH 142 or equivalent with a grade of C or better (4-5 credit hours)

**Core Courses (12 hours)**

* STAT 301, 330, 401 and 402

**Elective Courses (3 hours)**

This student is required to take at least 3 additional credit hours of courses using SAS, selected from the following:

* Any 300-level or higher STAT course using SAS, other than STAT 301, 330, 401, and 402
* MATH 498 (Undergraduate Senior Project). Students are required to provide an electronic copy of their paper to the Statistics Education Committee of the Department of Mathematics and Computer Science to verify the use of SAS software.
* Any 300-level or higher course using SAS in another department, with prior approval from the Statistics Education Committee of the Department of Mathematics and Computer Science

**5. Budget implications:**

The proposed certificate program in statistical methods using SAS will increase enrollment in some of the required courses in the program. The Department of Mathematics and Computer Science has hired three tenure-track assistant professors in statistics and hopes to hire more in the future for the purpose of establishing a major in statistics.

**6. Proposed term for implementation:**

Fall 2011

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

Department of Mathematics and Computer Science \_\_4-30-2010\_\_\_\_\_\_\_

 OCSE Curriculum Committee \_\_3-3-2011\_\_\_\_\_\_\_\_

 Undergraduate Curriculum Committee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Attachment: Program Inventory Form**