MEMORANDUM TO: Ogden College of Science and Engineering Curriculum Committee

Dr. Jack Rudolph	Dr. James Gary	Dr. Mike Carini
Dr. Martin Stone	Dr. Huanjing Wang	Dr. Edward Kintzel
Dr. Greg Arbuckle	Dr. Julie Ellis	Dr. Kelly Madole
Dr. Mark Revels	Dr. Warren Campbell	Dr. Steve Haggbloom
Dr. Bruce Schulte	Dr. David Keeling	Dr. Les Pesterfield
Dr. Phil Lienesch	Dr. Xingang Fan	
Dr. Cathleen Webb	Dr. Bruce Kessler	
Dr. Hemali Rathnayake	Dr. Richard Schugart	

FROM: Kenneth Crawford, Chair

SUBJECT: Agenda for Thursday, May 7, 2015, 4:00 p.m. in COHH 4123

A. OLD BUSINESS:

I. Consideration of the minutes of the April 2, 2015 meeting.

B. NEW BUSINESS:

Information Items

Department of Agriculture

I. Colonnade Program Course Proposal: Explorations Category
   a. AGRI 280, Introduction to Environmental Science, 3 hrs.

Department of Computer Science

I. Colonnade Program Course Proposal: Foundations Category
   a. CS 146, Introduction to Programming, 3 hrs.

Consent Items

Department of Architectural & Manufacturing Sciences

I. Proposal to Revise Course Title
   a. CIT 300, On-Line Training Foundations, 3 hrs.

Department of Computer Science

I. Proposal to Revise Course Prerequisites/Corequisites
   a. CS 360, Software Engineering I, 3 hrs.
   b. CS 382, Programming Languages, 3 hrs.

Action Items

Department of Architectural & Manufacturing Sciences

I. Proposal to Revise a Program
   a. Ref. 555, Computer Information Technology, 36 hrs.

Department of Engineering

I. Proposal to Create a New Course

a. EE 436, Electric Machines and Drives, 3 hrs.

C. **OTHER BUSINESS**

Minutes – OCSE Curriculum Committee **April 2, 2015**

MEMBERS PRESENT:
Electronic Vote

FROM: Ken Crawford, Chair

OLD BUSINESS:
Keeling/Madole moved for approval of the minutes of the March 5, 2015 meeting. Motion approved.

NEW BUSINESS:

Consent Agenda
Keeling/Madole moved to approve proposal to delete a program, Ref. 330, City and Regional Planning minor. Motion approved 14-0.

Action Agenda

Department of Agriculture
Keeling/Madole moved to approve proposal to revise a program, Ref. 508, Major in Agriculture – General Agriculture Concentration. Motion approved 14-0.

OTHER BUSINESS:

No other business.

Colonnade Program Course Proposal: Explorations Category

1. What course does the department plan to offer in Explorations? Which subcategory are you proposing for this course?

AGRI 280, Introduction to Environmental Science (Natural and Physical Sciences Subcategory)

2. How will this course meet the specific learning objectives of the appropriate subcategory? Please address all of the learning outcomes listed for the appropriate subcategory.

AGRI 280 will introduce students to the application of science to analyze and critically think of solutions to environmental problems we have today. Local topics such as cave environments will be discussed as well as worldly topics such as global warming. Environmental science is an ideal class for students who are not science majors to be introduced to scientific data because most of them have heard of these environmental problems before through various news media. This gives them the opportunity to apply their own knowledge of current issues and analyze new scientific data to think more critically about these issues. They will also examine their own lifestyle choices and analyze how these choices positively or negatively affect the environment. In one exercise, students keep track of their own water usage for an entire day and then the following day, they try to live off just 3 gallons of water for drinking, bathing and cooking. This is to give them a worldly perspective since the average water usage in poorer countries is only 3 gallons per day. This helps students gain an understanding of environmental impacts of their own life as well as critically think of how other people live in the world. This is also information that they can use throughout their life.

Course objectives: Students who complete AGRI 280, Introduction to Environmental Science, will be able to:

- Describe principles of environmental science such as pollution, populations, ecosystems, climate, water cycles, geochemical cycles and energy.
- Discuss the role of biodiversity in maintaining the health of environments.
- Apply the scientific method to propose solutions to environmental problems.
- Analyze scientific data from current scientific literature to project future trends and to propose solutions to environmental problems.
- Describe anthropogenic and natural environmental changes.
- Define various types of pollution, where they come from and ways of dealing with those pollutants.
- Explain human population growth and use data for future predictions.
- Analyze the role of environment in human disease, toxicology and epidemiology.
- Examine personal lifestyle choices and affects those choices make on the environment.
- Investigate current and past laws and regulations governing environmental policy.

- Investigate the importance of protecting water and air quality and the long-term consequences of not doing so.
- Evaluate the environmental cost of consumer products from "cradle to grave".
- Discuss future urbanization with regard to sustainability.

1. Demonstrate an understanding of the methods of science inquiry.

Learning Objective 1 for the Colonnade Explorations, Natural and Physical Sciences Subcategory, is met by the following course objectives:

- Apply the scientific method to propose solutions to environmental problems.
- Analyze scientific data from current scientific literature to project future trends and to propose solutions to environmental problems.
- Explain human population growth and use data for future predictions.

2. Explain basic concepts and principles in one or more of the sciences.

Learning Objective 2 for the Colonnade Explorations, Natural and Physical Sciences Subcategory, is met by the following course objectives:

- Describe principles of environmental science such as pollution, populations, ecosystems, climate, water cycle, geochemical cycles and energy.
- Define various types of pollution, where they come from and ways of dealing with those pollutants.
- Discuss the role of biodiversity in maintaining the health of environments.
- Describe anthropogenic and natural environmental changes.
- Analyze the role of environment in human disease, toxicology and epidemiology.

3. Apply scientific principles to interpret and make predictions in one or more of the sciences.

Learning Objective 3 for the Colonnade Explorations, Natural and Physical Sciences Subcategory, is met by the following course objectives:

- Explain human population growth and use data for future predictions
- Analyze scientific data from current scientific literature to project future trends and to propose solutions to environmental problems.
- Analyze the role of environment in human disease, toxicology and epidemiology
- Investigate the importance of protecting water and air quality and the long-term consequences of not doing so.
- Discuss future urbanization with regard to sustainability.

4. Explain how scientific principles relate to issues of personal and/or public importance.

Learning Objective 4 for the Colonnade Explorations, Natural and Physical Sciences Subcategory, is met by the following course objectives:

- Examine personal lifestyle choices and affects those choices make on the environment.
- Investigate current and past laws and regulations governing environmental policy.
- Investigate the importance of protecting water and air quality and the long-term consequences of not doing so.
- Evaluate the environmental cost of consumer products from "cradle to grave".
- Discuss future urbanization with regard to sustainability.

3. Syllabus statement of learning outcomes for course. NOTE: In multi-section courses, the same statement of learning outcomes must appear on every section's syllabus.

Course Description: This course will introduce the student to the study of environmental science and the issues we face currently in our environment. The major concepts discussed include: biodiversity; air, water and land pollution; concepts of global warming and energy management; how our lifestyles impact the environment; sustainability and urbanization; and governmental policies that affect environmental issues. This course provides a general understanding of how to apply science to evaluate and analyze current environmental problems.

This class fulfills the Natural and Physical Science subcategory of the Explorations category of the Colonnade Program.

Student Learning Objectives:

Students completing AGRI 280 will have the ability to:

1. Explain major concepts of environmental science.
2. Describe the role of biodiversity in maintaining the health of environments.
3. Define various types of pollution, where they come from and ways of dealing with those pollutants.
4. Demonstrate how to use the scientific method to propose solutions to current environmental problems.
5. Investigate current and past laws and regulations governing environmental policy.
6. Describe the role of environment in human disease, toxicology and epidemiology.
7. Analyze data and think critically about global warming concepts and other environmental issues.
8. Discuss future urbanization with regard to sustainability.
9. Examine how their daily lifestyle choices may impact the environment.

4. Brief description of how the department will assess the course for these learning objectives.

A comprehensive assessment that addresses each of the four learning outcomes for the Natural and Physical Sciences Subcategory will be administered in the week before final exams. There will be 5-10 questions for each learning outcome. A score of 75% will indicate satisfactory attainment of the learning outcomes. It is anticipated that the percentage of satisfactory scores on the assessment will align with the percentage of students with a C or better in the course. This assessment will be executed via Blackboard at the end of the course for all sections. Students will earn 50 points upon completion of the assessment.

Objective	Assessment Categories
Understanding of the methods of scientific inquiry	• The scientific method • Description of each step in the scientific method • Formulating hypotheses to solve environmental solutions • How to analyze scientific data about an environmental problem
Explain basic concepts and principles	• Major themes of environmental science • Concepts of ecosystems • Population dynamics • Human population growth • Energy flow and management • Nitrogen and phosphorous cycles • Human toxicology & epidemiology • Water cycle • Global warming and climate changes • Atmosphere structure
Apply scientific principles to interpret and make predictions	• Projecting human population growth • Ecosystem carrying capacity and sustainability • Exponential growth • Water and air pollution predictions • Evaluate environmental data • Analyze trends in environmental data to make future predictions • Risk analysis
How scientific principles relate to issues of personal and public importance	• Environmental hazards in your home • Water quality and safe drinking water • Water consumption • Air quality and indoor air quality in the home

	• Hazardous and solid wastes • Environmental goods and services • Cost of environmental pollution • Energy consumption, conservation, and alternatives

5. How many sections of this course will your department offer each semester?

The Department of Agriculture will initially offer 1-3 sections of AGRI 280 per semester as face to face classes on the main campus and Glasgow campus and/or online through Blackboard. If these classes fill, more sections may be offered. This could initially accommodate 30 to 90 students per semester. If additional sections were offered, the number of students accommodated would increase.

6. Please attach sample syllabus for the course.
Attached, please find an example syllabus for an online class without individual instructor information.

AGRI 280– Introduction to Environmental Science

Instructor:
Office:
Phone:
E-mail:

Course Description: This course will introduce the student to the study of environmental science and the issues we face currently in our environment. The major concepts discussed include: biodiversity; air, water and land pollution; concepts of global warming and energy management; how our lifestyles impact the environment; sustainability and urbanization; and governmental policies that affect environmental issues. This course provides a general understanding of how to apply science to evaluate and analyze current environmental problems.

This class fulfills the Natural and Physical Science subcategory of the Explorations category of the Colonnade Program.

Student Learning Objectives:
Students completing AGRI 280 will have the ability to:

1. Explain major concepts of environmental science
2. Describe the role of biodiversity in maintaining the health of environments
3. Define various types of pollution, where they come from and ways of dealing with those pollutants
4. Demonstrate how to use the scientific method to propose solutions to current environmental problems.
5. Investigate current and past laws and regulations governing environmental policy.
6. Describe the role of environment in human disease, toxicology and epidemiology
7. Analyze data and think critically about global warming concepts.
8. Discuss future urbanization with regard to sustainability
9. Examine how their own daily lifestyle choices may impact the environment

Text: Wright and Boorse. 2014. **Environmental Science**. Pearson University Press. 12th edition
Assessment: Students will be assessed according assignments and examinations with the following approximate points, however this WILL change slightly.

Examinations x2	200 pts.
Critical thinking paper	100 pts.
Assignments.	250 pts.
Final Project	100 pts.
Colonnade Assessment	50 pts
Final Exam	100 pts.
Total Points	750 pts.

Total possible points will be added and grades determined according to the standard letter grading scale of:

A = 90-100%
B = 80-89%
C = 70-79%
D = 60-69%
F = < 60%

Attendance: Management of "class time" is essential for an online class as there are no face to face sessions in which you are motivated to attend. Therefore, please understand from the beginning that you must intentionally carve out time to devote to the class.

Student Accessibility Resource Center (Formerly Student Disability Services):
Students with disabilities who require accommodations (academic adjustments and/or auxiliary aids or services) for this course must contact the Office for Student Disability Services,. The OFSDS telephone number is (270) 745-5004 V/TDD."
"Per university policy, please do not request accommodations directly from the professor or instructor without a letter of accommodation from the Office for Student Disability Services."

Exams: Exams will be administered online via DELO testing center. This means you can take them from your own computer instead of going to a testing center. I have chosen this method to make exams less stressful. However, this is a program you will need to download to your computer BEFORE you take your exam. If you have technical difficulties with this program, you will need call WKU IT helpdesk at 745-7000 for assistance.

Approximate Class Schedule: ***Subject to change***

Week 1: Intro to Environmental Science and Ecosystems

Week 2: Water cycle and water pollution

Week 3: Land ecosystems, soil conservation and pollution

Week 4: How food production and distribution and how it affects environment

Week 5: Exam 1

Week 6: Pest control and environmental impacts

Week 7:. Air pollution and global warming

Week 8: Energy: Nuclear and Solar Energy

Week 9: Renewable energy sources

Week 10: Exam 2

Week 11: Human health and the environment

Week 12: Environmental policy and cleaning up "the mess"

Week 13: Urban sprawl

Week 14: Moving toward sustainability

Week 15: Final Project Work Week and Review for Comprehensive Exam (No lectures or new material). **Take Colonnade assessment during this week.**

Week 16: Final Exam (comprehensive)

Colonnade Program Course Proposal
Foundations Category (QR)

Quantitative Reasoning

MATH 109, 116, or other approved courses. (3 hours)

Quantitative Reasoning courses teach students to interpret, illustrate, and communicate mathematical and/or statistical ideas. Students will learn to model and solve problems. Students with a Math ACT of 26 or higher will receive 3 hours credit for this requirement.

Students will demonstrate the ability to:

1. Interpret information presented in mathematical and/or statistical forms.
2. Illustrate and communicate mathematical and/or statistical information symbolically, visually and/or numerically.
3. Determine when computations are needed and execute the appropriate computations.
4. Apply an appropriate model to the problem to be solved.
5. Make inferences, evaluate assumptions, and assess limitations in estimation modeling and/or statistical analysis.

Please complete the following and return electronically to colonnadeplan@wku.edu.

1. What course does the department plan to offer in ***Foundations: Quantitative Reasoning***?

   CS 146: Introduction to Programming

2. How will this course meet the specific learning objectives for this category? Please address **all** of the learning outcomes listed for the appropriate subcategory.

   Quantitative Reasoning courses teach students to interpret, illustrate, and communicate mathematical and/or statistical ideas. Students will learn to model and solve problems.

   Students in CS 146 learn Visual Basic, a programming language used by many software developer. Visual Basic is designed to make user-friendly programs easier to develop. The students in CS 146 learn how to write programs to

interpret, illustrate, and communicate mathematical ideas. They learn how to analyze a given problem, identify mathematical ideas behind the problem, and how to model and solve problems.

Learning Objective 1: Interpret information presented in mathematical and/or statistical forms.

Students in CS 146 learn to interpret information presented in mathematical form by first learning to recognize the presence of mathematical information given in a problem such as mathematical formulas, tables or descriptive text; and secondly, by learning to accurately interpret the mathematical information given to determine how to use it to design and structure a solution to the problem.

Specifically, students learn to:

- Interpret information provided in table form, such as tax rates or tax payments, precipitation data, or survey data;
- Interpret information provided as mathematical formulas, such as formulas to determine the wind chill factor, the BMI, an approximation of pi, mortgage payments, and the determination of the next Fibonacci number
- Interpret numerical information provided in a descriptive text, such as % to use to determine gratuity, the distance and time traveled, the ratio of the areas of two squares, the description of when a year is a leap year
- Interpret the information directly, that is by answering specific questions, such as "What is the tax payment for an adjusted income of $34231?" or "What is the wind chill factor if the temperature is 28 degree and the wind speed is 5 mi/h"?
- Interpret the information in general by translating it into one or more statements in Visual Basic, such that the program can correctly answer many questions of the form "What is the tax payment for an adjusted income of $**x**?" or "What is the wind chill factor if the temperature is **t** and the wind speed is **s**?"

Learning Objective 2: Illustrate and communicate mathematical and/or statistical information symbolically, visually and/or numerically.

Students in CS 146 learn to illustrate and communicate mathematical and statistical information symbolically, visually, and numerically. "Symbolically" here means using the symbols and rules of writing statements in Visual Basic. The information is communicated to the computer running the program as well as to humans reading the program. The last item of Learning Objective 1 – "Interpret the information in general by translating it into one or more statements in Visual Basic" is a manner of interpretation which leads to a symbolic illustration of the mathematical information in the problem.

Specifically, students learn how to

- define simple variables to express symbolically single quantitative items
- translate (= symbolically illustrate) mathematical formulas into numerical expressions; example: numerical expression to compute a mortgage payment
- translate (= symbolically illustrate) given mathematical processes into procedures; example: procedure for computing the solutions to a quadratic equation
- translate (= symbolically illustrate) mathematical relationships given as descriptive text into functions or procedures; example: function for computing the gratuity given the total and a %
- illustrate and communicate statistical information numerically by summarizing a dataset via the calculation of the mean and the standard deviation.
- illustrate and communicate mathematical information visually by displaying computation results graphically, such as a bar graph or chart.

Learning Objective 3: Determine when computations are needed and execute the appropriate computations.

In the context of this proposal, computation means a computation which results in a numeric value. When developing a program, two different types of Visual Basic statements are used: a) control statements which affect the flow of control (i.e. answer the question 'What must be done next?') b) numeric computation statements. Writing any program thus is an exercise in determining "what must be done when" including determining when computations are needed.

Students in CS 146 learn to determine when computations are needed and execute the appropriate computations through projects and assignments which use if-blocks (decision control statements) and loops (repetition control statements) to solve problems accurately and efficiently.

Specifically, students learn how to

- use relational and logical operators to make conditions and determines whether the condition is true or false. The conditions determine when computations are needed. Example: write a condition checking high school GPA and ACT scores for college students admission.

- write if-blocks to execute appropriate computations. An if-block allows a program to decide on a course of action based on whether a certain condition is true or false. Example: compute the real result(s) of a quadratic equation (the if-block is needed, since there might be 0, 1 or 2 real solutions to a given quadratic equation).

- write loops (or repetitions). A loop is used to repeat a sequence of statements a number of times. At each repetition, the statements act upon variables whose values are changing. Example: A given amount of money is deposited into a savings account and it accumulates at 6% interest compounded annually. Write a program to determine when the account holder will be a millionaire and display each year's balance.

Learning Objective 4: Apply an appropriate model to the problem to be solved.

Students in CS 146 learn to apply an appropriate model to the problem to be solved via projects and assignments designed to teach recognition of what combination of decision controls and loops are needed to appropriately model a given problem and to develop skill in performing such applications. Example: student have to decide whether a loop is need for mortgage loan interest computation.

Learning Objective 5: Make inferences, evaluate assumptions, and assess limitations in estimation modeling and/or statistical analysis.

Students in CS 146 learn to make inferences, evaluate assumptions and assess limitations in estimation modeling via projects and assignments from real life applications, finance, business, and other subjects which require considering appropriate assumptions and/or limitations on procedures selected and making

inferences from the results. Example: When students do mortgage loan interest computation, one assumption is that the interest rate is always greater than 0.

3. In addition to meeting the posted learning outcomes, how does this course contribute uniquely to the *Foundations* category (i.e., why should this course be in Colonnade)? Discuss in detail.

   CS 146 will serve to introduce students to the fundamentals of designing and developing computer programs. Software development requires careful planning, logical reasoning, and attention to detail. These are valuable skills in any discipline. Additionally, computer software is pervasive in the modern world, touching upon practically every area of study and human endeavor. Students in any discipline will benefit from a basic understanding of how computer programs work and what their limitations are.

   Computer Science has deep roots in mathematics, both at a theoretical level (complexity analysis, computability), and a practical level. Virtually every program written is, in some way, a solution to a "word problem". Reasoning skills are employed to find a solution that is correct and efficient and to make an argument that the solution satisfies the criteria in the problem. These are fundamentally quantitative reasoning skills, even when problems don't appear to be algebraic in nature. For example, searching a long sequence of characters for a specific subsequence may not sound like a mathematical problem, but a correct algorithm (specific sequence of operations) must be developed.

4. Syllabus statement of learning outcomes for the course. NOTE: In multi-section courses, the same statement of learning outcomes must appear on every section's syllabus.

Sample Syllabus Statement

CS 146: Introduction to Programming

The following items will be included in all CS 146 syllabi.

Prerequisites:

Two years of high school algebra or concurrent enrollment in a college algebra course.

Course Description:

CS 146 is an introduction to problem solving using a computer programming language. This course provides students with the ability to understand and apply math and problems solving skills and concepts. CS 146 students will be able to: use fundamental reasoning principles; write and understand algorithms; develop and understand various programming techniques; solve practical problems through coding; interpret results using graphical displays.

Topics include: introduction to computers and problem solving; visual basic controls and events; variables, input, and output; decisions; general procedures; repetitions; graphics.

Learning Objectives:

This course fulfills the Quantitative Reasoning requirement in the Foundations category of WKU's Colonnade program. As part of that program, CS 146 has the following learning objectives:

Students will demonstrate the ability to:

1. Interpret information presented in mathematical and/or statistical forms.
2. Illustrate and communicate mathematical and/or statistical information symbolically, visually and/or numerically.
3. Determine when computations are needed and execute the appropriate computations.
4. Apply an appropriate model to the problem to be solved.
5. Make inferences, evaluate assumptions, and assess limitations in estimation modeling and/or statistical analysis.

Types of Assessments:

The following assessments are used in this course: Exams, homework assignments, projects, and in-class work.

5. Give a brief description of how the department will assess the course beyond student grades for these Colonnade learning objectives.

There will be several projects in this course. The department will use one of the projects in order to assess how well the course's learning objectives are being met. The project will require student to do:

a. Interpret information presented in mathematical and/or statistical forms.
b. Illustrate and communicate mathematical and/or statistical information symbolically, visually and/or numerically.
c. Determine when computations are needed and execute the appropriate computations.
d. Apply an appropriate model to the problem to be solved.
e. Make inferences, evaluate assumptions, and assess limitations in estimation modeling and/or statistical analysis.

At the end of each semester;

- if there is only one section of the course, then the projects of all the students are used for assessment purpose.
- If there are two or more sections, say N, then (100/N) % of projects of each section of the course will be selected at random for assessment purpose.

At the beginning of the next semester a team of faculty members will assess each project. Before the assessment, the name of the students will be eliminated.

Projects will be given one of four designations:

Evaluation	**Performance Expectations**
Excellent	Student interprets information provided as mathematical formulas, identifies variables to express symbolically single quantitative items, and translates mathematical formulas into numerical expressions correctly. Student makes the computation correctly using decision and repetitions. Student makes reference, evaluates assumptions and assesses limitations in estimation modeling for the project. The project can be compiled and displays results correctly.

Good	Student interprets information provided as mathematical formulas, identifies variables to express symbolically single quantitative items, and translates mathematical formulas into numerical expressions correctly. Students makes the computation correctly using decision statements. However student is unable to identify when repetitions are needed to appropriately model a given problem. Student makes reference, evaluates assumptions, but unable to assess limitations in estimation modeling for the project. The project can be compiled and displays most results correctly.
Fair	Student interprets information provided as mathematical formulas, identifies variables to express symbolically single quantitative items, and translates mathematical formulas into numerical expressions correctly. However student is unable to make the computation correctly because they are unable to write correct decision statements which determine when appropriate computations are needed. Student can evaluate assumptions, but cannot make reference and assess limitations in estimation modeling for the project. The project can be compiled and displays partial results.
Poor	Student cannot interpret information provided as mathematical formulas. Student cannot identify variables to express symbolically single quantitative items and translate mathematical formulas into numerical expressions. The project cannot be compiled and run.

The results will be tabulated and given to the Department Chair.
The Department Chair will convene the relevant faculty to review the results and to determine what steps, if any, need to be taken in order to improve the instruction in the course.

6. How many sections of this course will your department offer each semester?

Two per semester

7. Please attach sample syllabus for the course.

CS 146 Introduction to Programming

3 credit hours

Catalog Statement

Prerequisites: Two years of high school algebra or concurrent enrollment in a college algebra course.

A study of the algorithmic approach in the analysis of problems and their computational solutions. A structured language will be introduced and used in solving assigned problems. Lab sessions may be held in addition to lecture sessions. No Acceptable for credit in computer science major or minor

Course Description:

This course is an introduction to problem solving using computer programming language. This course provides students with the ability to understand and apply math and problem solving skills and concepts. CS 146 students will be able to: use fundamental reasoning principles; write and understand algorithms; develop and understand various programming techniques; solve practical problems through coding; interpret results using graphical displays.

Topics include: introduction to computers and problem solving; visual basic controls and events; variables, input, and output; decisions; general procedures; repetitions; graphics.

Learning Objectives:

This course fulfills the Quantitative Reasoning requirement in the Foundations category of WKU's Colonnade program. As part of that program, CS 146 has the following learning objectives:

Students will demonstrate the ability to:

1. Interpret information presented in mathematical and/or statistical forms.
2. Illustrate and communicate mathematical and/or statistical information symbolically, visually and/or numerically.
3. Determine when computations are needed and execute the appropriate computations.
4. Apply an appropriate model to the problem to be solved.

5. Make inferences, evaluate assumptions, and assess limitations in estimation modeling and/or statistical analysis.

Textbook

Pearson Custom: Computer Science. Introduction to Programming with Visual Basic. Chapters written by David I. Schneider. ISBN 10: 1269291025

Course Grade

A weighted average for this course will be calculated. This weighted average will be calculated using the following scale.

Homework 20%

In class work 10%

Projects 35%

Three midterm Exams 20%

Final Exam 15%

Letter grades will be assigned from the weighted average using the following grading scale.

A 90 – 100 B 80 - 89 C 70 - 79 D 60 - 69 F 59 and below

Other details

Please be in your seat by the beginning of class. There is to be no food or drink in the classroom. Sleep is allowed only in the event of a stultifyingly boring lecture. Being caught reading a newspaper, using the computer for purposes other than the class or texting on a cell phone will count as half an absence.

For the major programming projects, there is a grace period: late projects will be accepted up to 48 hours after the due date with no penalty. Each on-time submission that grades at least a B will be rewarded with a 0.5 point boost to your final percentage.

Each assignment is to be done individually. There can be no sharing of code or solutions. If it can be shown that you even looked at someone else's programming assignment code, you will be considered guilty of plagiarism.

The minimum punishment requested for plagiarism, or any other academic misconduct, is dismissal from the class with a failing grade. You are required to protect your work from plagiarism. If your work is plagiarized, it will be assumed that you were a willing participant in the plagiarism and you will receive the same punishment as the plagiarist, absent evidence to the contrary.

Attendance is required. For each unexcused absence (except the first), your final percentage will suffer a deduction of 2 points (see previous section). Thus, five unexcused absences beyond the first will lower your score one full letter grade. An absence will be excused if you alert your instructor prior to the start of the class you will be missing. If you do not inform your instructor before the start of a missed class, you will need to provide a written, university authorized excuse.

In compliance with University policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Student Accessibility Resource Center located in Downing Student Union, 1074. The phone number is 270.745.5004 [270.745.5121 V/TDD] or email at sarc@wku.edu.

Per university policy, please DO NOT request accommodations directly from the professor or instructor without a letter of accommodation (LOA) from The Student Accessibility Resource Center.

Proposal Date: 3/26/15

Ogden College of Science & Engineering
Architectural & Manufacturing Sciences
Proposal to Revise Course Title
(Consent Item)

Contact Person: Mark A. Revels, Ph.D., mark.revels@wku.edu, 270-303-3019

1. **Identification of proposed course:**
   - 1.1 Course prefix (subject area) and number: CIT 300
   - 1.2 Course title: On-Line Training Foundations
   - 1.3 Credit Hours: 3

2. **Proposed course title:** Computer Information Technology Foundations

3. **Proposed abbreviated course title:** CIT Foundations
(maximum of 30 characters/spaces)

4. **Rationale for the revision of course title:** The old course title was developed when online education was more novel. Thus, even though the course overs CIT program foundational material using online methods, emphasizing the online delivery aspect is no longer as important as emphasizing the content.

5. **Proposed term for implementation: Spring 2016**

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

Architectural & Manufacturing Sciences Department	4/17/2015
Ogden College Curriculum Committee	
Undergraduate Curriculum Committee	
University Senate	

April 8, 2015

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

Contact Person: Huanjing Wang, huanjing.wang@wku.edu, 745-2672

1. **Identification of course:**
   - 1.1 Course prefix (subject area) and number: CS 360
   - 1.2 Course title: Software Engineering I

2. **Current prerequisites/corequisites/special requirements:**
   A grade of "C" or better in CS 221

3. **Proposed prerequisites/corequisites/special requirements:**
   A grade of "C" or better in CS 221 and COMM 145

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   Project presentation is required in this course. Therefore there is a need for students to acquire presentation skills before taking the course.

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

6. **Proposed term for implementation:**
   Spring 2016

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

Department of Computer Science	April 21, 2015
Ogden College Curriculum Committee	
Undergraduate Curriculum Committee	
University Senate	

April 8, 2015

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

Contact Person: Huanjing Wang, huanjing.wang@wku.edu, 745-2672

1. **Identification of course:**
   - 1.1 Course prefix (subject area) and number: CS 382
   - 1.2 Course title: Programming Languages

2. **Current prerequisites/corequisites/special requirements:**
   CS 221 with a grade of "C" or better

3. **Proposed prerequisites/corequisites/special requirements:**
   CS 221 with a grade of "C" or better and COMM 145

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   Project presentation is required in this course. Therefore there is a need for students to acquire presentation skills before taking the course.

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

6. **Proposed term for implementation:**
   Spring 2016

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

Department of Computer Science	April 21, 2015
Ogden College Curriculum Committee	
Undergraduate Curriculum Committee	
University Senate	

Proposal Date: 04/20/2015

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

Contact Person: Mark A. Revels, Ph.D., mark.revels@wku.edu, 270-303-3019

1. Identification of program:

1.1 Current program reference number: 555
1.2 Current program title: Computer Information Technology
1.3 Credit hours: 36

2. Identification of the proposed program changes:

- Change catalog description
- Add selective courses: AMS 342, 367, 390, 394, 396, 430, 475
- Add required capstone course: AMS 490

3. Detailed program description:

	Computer information technology (CIT) is an integral part of modern life and business. And, careers in the CIT field frequently exceed median pay and future job outlook growth. The CIT program at WKU can help prepare students for many rewarding careers, including: • **Computer Network Architect** • **Computer Programmer** • **Computer Support Specialist** • **Computer Systems Analyst** • **Database Administrator** • **Information Security Analyst** • **Network and Computer Systems Administrator** • **Software Developer** • **Web Developer**
The CIT degree requires 120 credit hours and leads to a Bachelor of Science degree. No minor or second major is required. Enrollment in the CIT program is limited and based on student qualifications. All CIT courses must be completed with a grade of "C" or better. All students must take the following courses: CIT 300, 302, 352, and 372. In addition, students must take CIT 310, 312, 330, 332, 350, and 370; transfer students will	**Program Description** The CIT **online** degree requires 120 credit hours and leads to a Bachelor of Science degree. No minor or second major is required. Enrollment in the CIT program is limited and based on student qualifications. All CIT courses must be completed with a grade of "C" or better. **The program requires 36 to 60 hours of upper-division CIT coursework, depending on transfer credits.** ~~All students must take the following courses: CIT~~

transfer 18 hours of credit to fulfill these course requirements. Students must take 30 hours of electives from the following list: CIT 412, 414, 416, 418, 432, 434, 436, 438, 452, 454, 456, 458, 472, 474, 476, 478, 482, 484, 486, 492, 494, and 496; 2+2 students will transfer 6 hours to apply toward the elective requirement. Electives should be selected consistent with WKU's degree requirements including:	~~300, 302, 352, and 372. In addition, students must take CIT 310, 312, 330, 332, 350, and 370; transfer students will transfer 18 hours of credit to fulfill these course requirements. Students must take 30 hours of electives from the following list: CIT 412, 414, 416, 418, 432, 434, 436, 438, 452, 454, 456, 458, 472, 474, 476, 478, 482, 484, 486, 492, 494, and 496; 2+2 students will transfer 6 hours to apply toward the elective requirement.~~ ~~Electives~~ **All courses** should be selected consistent with WKU's degree requirements including:
• 36 hours minimum in courses earned at WKU • 42 hours in upper-division credit [Students who transfer to WKU with an applied associate degree in a technology area (e.g., Associate of Applied Science) receive a 6-hour waiver from the overall upper-level course requirement.] • 120 hours minimum overall • Colonnade Program Requirements • MATH 116 or equivalent	• 36 hours minimum ~~in courses~~ **must be** earned at WKU **(typically satisfied by CIT course requirements below)** • 42 hours **must be** in upper-division courses ~~[Students who transfer to WKU with an applied associate degree in a technology area (e.g., Associate of Applied Science) receive a 6-hour waiver from the overall upper-level course requirement.]~~ **(36 hours for students that transfer with an Associate of Applied Science degree in a computer technology or related major, also satisfied by CIT course requirements below)** • 120 hours minimum overall • Colonnade program requirements • MATH 116 or **higher**
CIT majors transferring with an associate's degree in information technology from one of WKU's partner schools should meet with their advisor to determine the 24 hours of transferred credit used in the major. A list of partner schools is available on the site.	~~CIT majors transferring with an associate's degree in information technology from one of WKU's partner schools should meet with their advisor to determine the 24 hours of transferred credit used in the major. A list of partner schools is available on the site.~~ **Degree Requirements** **For transfer students (with an Associate of Applied Science degree or equivalent in computer technology or related major), 36 hours of CIT coursework is required. These include:** • **Four 300-level core courses: CIT 300, 302, 352, 372 (12 hours)** • **Seven courses, to be selected from 400-level CIT courses and/or from AMS**

	342, 367, 390, 394, 396, 430, 475 (21 hours) • **Capstone course: AMS 490 (3 hours, to be taken in last semester)** **For non-transfer students, 60 hours of CIT coursework is required. These include:** • **Ten 300-level foundation courses: CIT 300, 302, 310, 312, 330, 332, 350, 352, 370, 372 (30 hours)** • **Nine courses, to be selected from 400-level CIT courses and/or from AMS 342, 367, 390, 394, 396, 430, 475 (27 hours)** • **Capstone course: AMS 490 (3 hours, to be taken in last semester)** **Please visit the program website for more information: www.wku.edu/cit**

(Side-by-side table is required for most program changes showing revised program on the right and identifying deletions by strike-through and additions in boldface.)

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

- Change catalog description: The CIT program recently moved from University College to the AMS department (Ogden). The new catalog description is more consistent with AMS program catalog descriptions while also reflecting the AMS selective course additions.
- Add AMS selective courses: The AMS selective courses are being added due to student demand and in an attempt to provide technology-management related course options to CIT majors. As these courses are already provided by the department, this adds flexibility and value to the program with little or no additional cost.
- The program has an entry course, but no capstone in which to assess overall student learning. This change adds a required capstone course.

5. **Proposed term for implementation and special provisions (if applicable):** Spring, 2016

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

Architectural & Manufacturing Sciences Department	4/17/2015
Ogden College Curriculum Committee	
Undergraduate Curriculum Committee	
University Senate	

Proposal Date: March 20, 2015

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

Contact Person: Dr. Farhad Ashrafzadeh, Email: Farhad.Ashrafzadeh@wku.edu , phone: 270-745-5877

1. Identification of proposed course:

1.1 Course prefix (subject area) and number: EE 436
1.2 Course title: Electric Machines and Drives
1.3 Abbreviated course title: Electric Machines and Drives
1.4 Credit hours: 3 Variable credit (yes or no): no
1.5 Grade type: L (lecture)
1.6 Prerequisites : EE 473 and EE 345
1.7 Course description:
Introduction to principles and contemporary applications of electric machines and drive systems as they pertain to electric vehicles, wind turbines, residential appliances, etc. Topics include the principles of electromechanical energy conversion, switch mode power converters, DC and AC machines, designing feedback controller for motor drives, and speed or torque control of both DC and AC motor drives.

2. Rationale:

2.1 Reason for developing the proposed course:
Electric machines account for 60% of total energy consumption at the national level and electric drives are widely used in renewable energy and electric vehicles. Knowledge of these topics is critical to workforce development, as these types of expertise are in high demand in the energy/renewable energy market. When the course was offered on a one-time basis in Spring 2014, twelve students registered and were successful. Therefore, we propose its implementation as an elective on an ongoing and sustainable basis.

2.2 Projected enrollment in the proposed course:
We estimate that around 10 to 15 students will enroll in this course each offering.

2.3 Relationship of the proposed course to courses now offered by the department:
This course will complement the required EE 431 "Introduction to Power Systems."

2.4 Relationship of the proposed course to courses offered in other departments:
No similar course is being offered in other academic units.

2.5 Relationship of the proposed course to courses offered in other institutions:
A similar course is offered in many engineering programs including:

ECE 500: Electric Machines and Drives, University of Louisville, KY
EE 341: Electric Drives and Machines, University of Texas at Austin, TX
ECE 453: Electric Motor Drives, North Carolina State University, NC
EECS 419: Electric Machinery and Drives. University of Michigan, MI
ECE 495/595: Electric Machinery and Drives, Miami University, FL.

3. Discussion of proposed course:

3.1 Schedule type: Lecture

3.2 Learning Outcomes: Upon completion of the course, students will:

- Be able to describe the structure of Electric Drive systems and their role in various applications such as flexible production systems, energy conservation, renewable energy, transportation, etc.
- Understand and characterize basic requirements of the mechanical load on electric drives.
- Understand the principles of power electronics in drives using switch-mode converters and pulse width modulation to synthesize the voltages in DC and AC motor drives.
- Understand the two basic principles (generation of force and emf) that govern electromechanical energy conversion.
- Be able to design speed and position controller of motor drives.
- Be able to model AC machines using space vectors.
- Be able to explain and utilize the basic principles of permanent magnet AC drives.
- Be able to explain and utilize the operation of induction machines in steady state.

3.3 Content outline:

- Introduction to electrical motor drives
- Mechanical system requirement of electrical drives
- Switched mode power converters for motor drives
- Basics of magnetic circuits
- Principles of electromechanical energy conversion
- DC motor drives
- Designing feedback controllers for motor drives
- Introduction to AC machines and space vectors
- Sinusoidal permanent magnet AC (PMAC) motor drives
- Speed control of AC induction motor drives

3.4 Student expectations and requirements:
Student learning will be evaluated using homework, quizzes, simulation, papers, and exams.

3.5 Tentative texts and course materials:
"Electric Machines and Drives: A First Course," By: Ned Mohan
"Electrical Machines, Drives, and Power Systems" By: Theodore Wildi

4. Resources:

4.1 Library resources:
No additional library resources are needed to deliver this course.

4.2 Computer resources:
No computer resources beyond what is currently available in the Department of Engineering will be required.

5. Budget implications:

5.1 Proposed method of staffing:
Faculty of the department with credentials in the appropriate discipline will teach this course.

5.2 Special equipment needed:
The Department of Engineering has a sufficient inventory of equipment to deliver this course.

5.3 Expendable materials needed:
No expendable materials needed.

5.4 Laboratory materials needed:
Existing laboratory supplies are sufficient to support the needs of this course.

6. Proposed term for implementation: Spring 2016

7. Dates of prior committee approvals:

Engineering Department	April 2, 2015
Ogden College Curriculum Committee	
Undergraduate Curriculum Committee	
University Senate	