MEMORANDUM TO: Ogden College of Science and Engineering Curriculum Committee

Dr. Taha Alyousef
Dr. Doug Harper
Dr. Michelle Jackson
Dr. Pat Kambesis
Dr. Phil Lienesch
Dr. Jeremy Maddox
Dr. Andy Mienaltowski
Dr. Les Pesterfield
Dr. Todd Willian

FROM: Greg Arbuckle, Interim Chair

SUBJECT: Agenda for Thursday, November 21, 2019 4:00 p.m. in OCH 1028

A. OLD BUSINESS:

I. Consideration of the minutes of the October 31, 2019 meeting.

B. NEW BUSINESS:

Type of item	Description of Item & Contact Information
Information	The following proposals were submitted via the expedited review process: **Proposal to Revise Course Catalog Listing** AMS 180, Intro to Architecture **Proposal Revise Course Prerequisites/Corequisites** CS 315, Introduction to Unix CS 325, Computer Organization and Architectures CS 351, Database Management Systems I CS 360, Software Engineering I CS 370, XML and Web Programming CS 372, Mobile App Development CS 381, Introduction to Computer Networks CS 421, Data Structures and Algorithm Analysis CS 443, Database Management Systems II CS 446, Interactive Computer Graphics CS 456, Artificial Intelligence
Consent	**Proposal to Suspend a Course** CHEM 314, Introductory Organic Chemistry, 5 hrs Contact: Jeremy Maddox, Jeremy.maddox@wku.edum x8725
Consent	**Proposal to Revise Course Prerequisites/Corequisites** PHYS 180, Introductory Modern Physics, 3 hrs. Contact: Michael Carini, mike.carini@wku.edu, x6198
Consent	**Proposal to Revise Course Prerequisites/Corequisites** CE 176, CE Freshman Design, 1 hr. Contact: Jason Wilson, Jason.wilson@wku.edu, x2322
Action	**Proposal to Make Multiple Revisions to a Course** HORT 419, Vegetable Production, 3 hrs.

	Contact: Roger Dennis, roger.dennis@wku.edu, x5971
Action	**Proposal to Revise a Program** Ref. 205, Associate Degree in Agricultural Technology and Management – General Agriculture Option, 60 hrs. Contact: Todd Willian, todd.willian@wku.edu, x5969
Action	**Proposal to Revise a Program** Ref. 518, Architectural Science, 81 hrs. Contact: Shahnaz Aly, Shahnaz.aly@wku.edu, x5849
Action	**Proposal to Create a New Certificate Program** Floodplain Management, 14 hrs. Contact: Warren.campbell@wku.edu, x8988
Action	**Proposal to Make Multiple Revisions to a Course** CS 339, Computer Science III, 3 hrs. Contact: Huanjing Wang, Huanjing.wang@wku.edu, x2672
Action	**Proposal to Create a New Course** CS 301, Game Programming, 3 hrs. Contact: Michael Galloway, michael.galloway@wku.edu, x2859
Action	**Proposal to Create a New Course** CS 290, Computer Science II, 4 hrs. Contact: Zhonghang Xia, Zhonghang.xia@wku.edu, x6459
Action	**Proposal to Create a New Course** CS 331, Data Structures, 3 hrs. Contact: Zhonghang Xia, Zhonghang.xia@wku.edu, x6459
Action	**Proposal to Revise a Program** Ref. 341, Minor in Computer Science, 20 hrs. Contact: Huanjing Wang, Huanjing.wang@wku.edu, x2672
Action	**Proposal to Revise a Program** Ref. 629/629P, Computer Science, 44-50 hrs. Contact: Huanjing Wang, Huanjing.wang@wku.edu, x2672

C. OTHER BUSINESS

Minutes – OCSE Curriculum Committee **October 31, 2019**

Members Present:
Dr. Taha Alyousef
Dr. Doug Harper
Dr. Michelle Jackson
Dr. Pat Kambesis
Dr. Phil Lienesch
Dr. Jeremy Maddox
Dr. Andy Mienaltowski
Dr. Todd Willian

FROM: Greg Arbuckle, Interim Chair

The meeting was called to order at 4:00pm.

OLD BUSINESS:
Harper Jackson moved to approve of the minutes of the September 26th meeting. Motion passed.

NEW BUSINESS:

Consent Agenda
The proposal to Revise Course Prerequisites: AMS 217 was moved to the action agenda by Maddox/Kambesis. After some discussion Alyousef/Harper moved to table. Motion to table passed unanimously.

The proposal to Revise Course Prerequisites: CE 303 was moved to the action agenda by Mienaltowski/Jackson and was later moved to approve by Mienaltowski/Jackson. Motion passed unanimously with a friendly amendment.

Maddox/Willian moved to approve the remaining consent agenda.

Action Agenda

Chemistry Department
Jackson/Willian moved to approve Proposal to Make Multiple Revisions to a Course: CHEM 304. Motion passed unanimously with a friendly amendment.

Harper/Willian moved to bundle and approve Proposals to Make Multiple Revisions to a course: CHEM 320, CHEM 420, CHEM 430, CHEM 435, and CHEM 450. Motion passed unanimously with a friendly amendment.

Geography & Geology Department
Maddox/Harper moved to bundle and approve proposals to Make Multiple Revisions to a course: GEOL 112 & GEOL 114. Motion passed unanimously.

Harper/Willian moved to approve Proposal to Create a New Course: GEOL 250. Moved passed unanimously.

Mienaltowski/Willian moved to approve Proposal to Create a New Course: GEOL 301. Motion passed unanimously.

Physics & Astronomy Department

Harper/Jackson moved to approve Proposal to Create a New Course: PHYS 363. After some discussion Maddox/Willian moved to table. Motion to table passed unanimously.

School of Engineering & Applied Sciences

Maddox/Harper moved to approve Proposal to Create a New Course: CE 342. After some discussion Lienesch/Mienaltowski moved to table. Motion to table passed unanimously.

Mienaltowski/Jackson moved to approve Proposal to Create a New Course: CE 432. Motion passed unanimously.

Jackson/Maddox moved to approve Proposal to Revise a Program: Ref. 476 Systems Engineering minor. Motion passed unanimously with a friendly amendment.

Maddox/Harper moved to approve a Proposal to Revise a Program: Ref. 518, Architectural Science. Motion passed unanimously with a friendly amendment.

Willian/Jackson moved to approve a Proposal to Revise a Program: Ref. 534/534P, Civil Engineering. After some discussion Jackson/Mienaltowski moved to table. Motion to table passed unanimously.

OTHER BUSINESS:

CE 176: Freshman Design and CHEM 314: Intro Organic Chemistry were informational items on the October 31st agenda and had been sent through the expedited review process, but were kicked back to the college level for full review. These two items appear on the November College Curriculum Committee Agenda.

Dr. Taha Alyousef was nominated and elected to serve as the UCC Ogden College Curriculum Committee Representative.

Meeting Adjourned.

Proposal Date: 10/31/2019

Ogden College of Science and Engineering
School of Engineering and Applied Sciences
Proposal to Revise Course Catalog Listing
(Consent Item)

Contact Person: Shahnaz Aly, Associate Professor, Shahnaz.aly@wku.edu, 270 745 5849

1. **Identification of course:**
   1.1 Course prefix (subject area) and number: AMS 180
   1.2 Course title: Intro to Architecture

Current course catalog listing:
~~**Survey of the history of architectural theory and application from antiquity to today**~~. The primary vehicle of investigation will be the architectural artifacts of the built environment and the philosophical rationale behind the motivation for their creation.

2. **Proposed course catalog listing:**
   (aim for 25 words or less)

An introductory course to Architecture. It covers the basic concepts of building design and architectural theory of various architectural styles. The primary vehicle of investigation is the architectural artifacts of the built environment and the philosophical rationale behind the motivation for their creation.

3. **Rationale for revision of the course catalog listing:**

Amendment to respond to course contents and student's learning objectives

4. **Proposed term for implementation:**
   As soon as available
5. **Dates of prior committee approvals:**

School of Engineering & Applied Sciences	**11/15/2019**
Ogden College Dean's Office	
Provost	

Proposal Date:10/16/2019

Ogden College
School of Engineering and Applied Sciences
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 315
   - 1.2 Course title: Introduction to Unix

2. **Current prerequisites/corequisites/special requirements:**
   Prerequisite: Prerequisite: CS 221 (corequisite) or permission of instructor.

3. **Proposed prerequisites/corequisites/special requirements:**
   Prerequisite: A grade of "C" or better in CS 290 or permission of instructor.

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   The original CS 180 and CS 221 courses have been splitted into CS 180, CS 290 and CS 331. CS 221 will not be offered in future. The prerequisite change reflects the current CS curriculum.

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

6. **Proposed term for implementation:**
   Fall 2020

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

School of Engineering and Applied Sciences	11/15/2019
Ogden College Dean's Office	
Provost	

Proposal Date:10/16/2019

Ogden College
School of Engineering and Applied Sciences
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 325
   - 1.2 Course title: Computer Organization and Architectures

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

3. **Proposed prerequisites/corequisites/special requirements:**
   Prerequisite: A grade of "C" or better in CS 290.

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   The original CS 180 and CS 221 courses have been splitted into CS 180, CS 290 and CS 331. CS 221 will not be offered in future. The prerequisite change reflects the current CS curriculum.

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

6. **Proposed term for implementation:**
   Fall 2020

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

School of Engineering and Applied Sciences	**11/15/2019**
Ogden College Dean's Office	
Provost	

Proposal Date:10/16/2019

Ogden College
School of Engineering and Applied Sciences
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 351
   - 1.2 Course title: Database Management Systems I

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

3. **Proposed prerequisites/corequisites/special requirements:**
   Prerequisite: A grade of "C" or better in CS 290.

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   The original CS 180 and CS 221 courses have been splitted into CS 180, CS 290 and CS 331. CS 221 will not be offered in future. The prerequisite change reflects the current CS curriculum.

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

6. **Proposed term for implementation:**
   Fall 2020

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

School of Engineering and Applied Sciences	**11/15/2019**
Ogden College Dean's Office	
Provost	

Proposal Date:10/16/2019

Ogden College
School of Engineering and Applied Sciences
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:**
   Prerequisite: (CS 221 with a "C" or better) or (CS 239 with a "B" or better or CS 180 with a "B" or better and EE 380 with a "C" or better) and COMM 145 with a "C" or better.

3. **Proposed prerequisites/corequisites/special requirements:**
   Prerequisites: ((CS 331 and CS 351 with a "C" or better) or (CS 239 with a "B" or better or CS 180 with a "B" or better and EE 380 with a "C" or better)) and COMM 145 with a "C" or better.

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   The original CS 180 and CS 221 courses have been splitted into CS 180, CS 290 and CS 331. CS 221 will not be offered in future. The prerequisite change reflects the current CS curriculum.

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

6. **Proposed term for implementation:**
   Fall 2020

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

School of Engineering and Applied Sciences	**11/15/2019**
Ogden College Dean's Office	
Provost	

Proposal Date:10/16/2019

Ogden College
School of Engineering and Applied Sciences
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 370
   - 1.2 Course title: XML and Web Programming

2. **Current prerequisites/corequisites/special requirements:**
   Prerequisite: CS 270 and CS 339 with grades of C or better..

3. **Proposed prerequisites/corequisites/special requirements:**
   Prerequisite: Grades of "C" or better in CS 270 and CS 331.

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   The original CS 180 and CS 221 courses have been splitted into CS 180, CS 290 and CS 331. CS 331 prepares students to take this course. The prerequisite change reflects the current CS curriculum.

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

6. **Proposed term for implementation:**
   Fall 2020

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

School of Engineering and Applied Sciences	11/15/2019
Ogden College Dean's Office	
Provost	

Proposal Date: 10/16/2019

Ogden College
School of Engineering and Applied Sciences
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 372
   - 1.2 Course title: Mobile App Development

2. **Current prerequisites/corequisites/special requirements:**
   Prerequisite: Grade of C or better in CS 221.

3. **Proposed prerequisites/corequisites/special requirements:**
   Prerequisite: A grade of "C" or better in CS 290.

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   The original CS 180 and CS 221 courses have been splitted into CS 180, CS 290 and CS 331. CS 221 will not be offered in future. The prerequisite change reflects the current CS curriculum.

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

6. **Proposed term for implementation:**
   Fall 2020

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

School of Engineering and Applied Sciences	11/15/2019
Ogden College Dean's Office	
Provost	

Proposal Date:10/16/2019

Ogden College
School of Engineering and Applied Sciences
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 331
   - 1.2 Course title: Introduction to Computer Networks

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

3. **Proposed prerequisites/corequisites/special requirements:**
   Prerequisite: A grade of "C" or better in CS 290.

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   The original CS 180 and CS 221 courses have been splitted into CS 180, CS 290 and CS 331. CS 221 will not be offered in future. The prerequisite change reflects the current CS curriculum.

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

6. **Proposed term for implementation:**
   Fall 2020

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

School of Engineering and Applied Sciences	**11/15/2019**
Ogden College Curriculum Committee	
Undergraduate Curriculum Committee	
University Senate	

Proposal Date:10/16/2019

Ogden College
School of Engineering and Applied Sciences
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 421
   - 1.2 Course title: Data Structures and Algorithm Analysis

2. **Current prerequisites/corequisites/special requirements:**
   Prerequisite: A grade of "C" or better in CS 339 and STAT 301.

3. **Proposed prerequisites/corequisites/special requirements:**
   Prerequisite: Grades of "C" or better in CS 331, CS 339 and STAT 301.

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   The original CS 180 and CS 221 courses have been splitted into CS 180, CS 290 and CS 331. The prerequisite change reflects the current CS curriculum.

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

6. **Proposed term for implementation:**
   Fall 2020

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

School of Engineering and Applied Sciences	11/15/2019
Ogden College Dean's Office	
Provost	

Proposal Date:10/16/2019

Ogden College
School of Engineering and Applied Sciences
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 443
   - 1.2 Course title: Database Management systems II

2. **Current prerequisites/corequisites/special requirements:**
   Prerequisite: Grades of "C" or better in CS 339 and CS 351.

3. **Proposed prerequisites/corequisites/special requirements:**
   Prerequisite: Grades of "C" or better in CS 331 and CS 351.

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   The original CS 180 and CS 221 courses have been splitted into CS 180, CS 290 and CS 331. The prerequisite change reflects the current CS curriculum.

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

6. **Proposed term for implementation:**
   Fall 2020

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

School of Engineering and Applied Sciences	**11/15/2019**
Ogden College Dean's Office	
Provost	

Proposal Date:10/16/2019

Ogden College
School of Engineering and Applied Sciences
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 446
   - 1.2 Course title: Interactive Computer Graphics

2. **Current prerequisites/corequisites/special requirements:**
   Prerequisite: MATH 307 and CS 339, both with grades of "C" or better.

3. **Proposed prerequisites/corequisites/special requirements:**
   Prerequisite: Grades of "C" or better in Math 307 and CS 331.

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   The original CS 180 and CS 221 courses have been splitted into CS 180, CS 290 and CS 331. CS 331 prepares students to take the course. The prerequisite change reflects the current CS curriculum.

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

6. **Proposed term for implementation:**
   Fall 2020

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

School of Engineering and Applied Sciences	**11/15/2019**
Ogden College Dean's Office	
Provost	

Proposal Date:10/16/2019

Ogden College
School of Engineering and Applied Sciences
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 456
   - 1.2 Course title: Artificial Intelligence

2. **Current prerequisites/corequisites/special requirements:**
   Prerequisite: CS 360 and CS 339, both with grades of "C" or better..

3. **Proposed prerequisites/corequisites/special requirements:**
   Prerequisite: Grades of "C" or better in CS 360 and CS 331.

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   The original CS 180 and CS 221 courses have been splitted into CS 180, CS 290 and CS 331. CS 456 will not require a big team project so that CS 360 is not need as prerequisite. The prerequisite change reflects the current CS curriculum.

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

6. **Proposed term for implementation:**
   Fall 2020

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

School of Engineering and Applied Sciences	**11/15/2019**
Ogden College Dean's Office	
Provost	

Proposal Date: 09/13/2019

Ogden College of Science & Engineering
Department of Chemistry
Proposal to Suspend a Course
(Consent Item)

Contact Person: Jeremy B Maddox, jeremy.maddox@wku.edu, 5-8725

1. **Identification of course:**
   1.1 Current course prefix (subject area) and number: CHEM 314
   1.2 Course title: INTRODUCTORY ORGANIC CHEMISTRY

2. **Rationale for the course suspension:**

   CHEM 314 has not been offered in several years, and the Department has no plans to offer it again in the future.

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

   No programs require CHEM 314. Programs that allow CHEM 314 to qualify as elective coursework should replace it with CHEM 340 and CHEM 341.

4. **Proposed term for implementation:**

   First available

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

Department of Chemistry	**10/4/2019**
Ogden College Curriculum Committee	
Professional Education Council (if applicable)	N/A
General Education Committee (if applicable)	N/A
Undergraduate Curriculum Committee	
University Senate	

Proposal Date:11/8/2020

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

Contact Person: Michael Carini, mike.carini@wku.edu, 56198

1. **Identification of course:**
   - 1.1 Course prefix (subject area) and number: Phys 180
   - 1.2 Course title: Introductory Modern Physics

2. **Current corequisites:** Math 136

3. **Proposed prerequisites:** Math placement of Math 117 or higher or equivalent

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**

   Math 116 provides students the math skill level required for mastering Modern Physics at the introductory level. The additional topics in trigonometry needed are introduced in the class. By changing the co-requisite, we can enroll more first time first year physics majors in this course in their first semester allowing us to immediately begin forming a cohort environment among physics major to improve persistence and retention.

5. **Effect on completion of major/minor sequence:** This pre-requisite change should enhance enrollment in the course and improve persistence and retention in the Physics major.

6. **Proposed term for implementation: 202030**

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

Department/ Unit Physics and Astronomy	**11/13/2019**
Ogden College Curriculum Committee	
Professional Education Council (if applicable)	
General Education Committee (if applicable)	
Undergraduate Curriculum Committee	
University Senate	

September 13, 2019

Ogden College of Science and Engineering
School of Engineering and Applied Sciences
Proposal to Revise Course Prerequisites
(Consent Item)

Contact Person: Jason Wilson, Jason.Wilson@wku.edu, 745-2322

1. **Identification of course:**
   - 1.1 Course prefix (subject area) and number: CE 176
   - 1.2 Course title: CE Freshman Design

2. **Current prerequisites:**
   Prerequisite(s): MATH 117 or higher (may be taken concurrently)

3. **Proposed prerequisites :**
   Prerequisite(s): MATH 136 or higher (may be taken concurrently)

4. **Rationale for the revision of prerequisites:**
   Historically, this course has been a co-requisite with Math 117. Overtime, it has become apparent that the co-requisite is not sufficient for the content of this course.

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

6. **Proposed term for implementation:**
   Next Available

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

School of Engineering and Applied Sciences	10/7/19
Ogden College Curriculum Committee	
Undergraduate Curriculum Committee	
University Senate	

Proposal Date: 11/14/2019

Ogden College of Science and Engineering
Department of Agriculture and Food Science
Proposal to Make Multiple Revisions to a Course
(Action Item)

Contact Person: Roger Dennis, roger.dennis@wku.edu, (270) 745-5971

1. Identification of course:

1.1 Current course prefix (subject area) and number: HORT 419

1.2 Course title: Vegetable Production

2. Revise course title:

2.1 Current course title: Vegetable Production

2.2 Proposed course title: Fruit, Vegetable, and Vineyard Production

2.3 Proposed abbreviated title: Fruit, Veg., and Vineyard Prod.

2.4 Rationale for revision of course title: Consolidation of selected topics covered in HORT 412 (Modern Fruit Production), HORT 426 (Vineyard Management) and HORT 419 (Vegetable Production) into a single course is an effort to streamline Horticulture course offerings and thus improve workload efficiencies while simultaneously offering students a broad perspective of fruit and vegetable production in a single course. While economically and culturally important, Kentucky's fruit and vegetable industry is not extensive enough to warrant 3 separate courses.

3. Revise course number:

3.1 Current course number:

3.2 Proposed course number:

3.3 Rationale for revision of course number:

4. Revise course prerequisites/corequisites/special requirements:

4.1 Current prerequisites/corequisites/special requirements: (indicate which)

4.2 Proposed prerequisites/corequisites/special requirements:

4.3 Rationale for revision of course prerequisites/corequisites/special requirements:

4.4 Effect on completion of major/minor sequence:

5. Revise course catalog listing:

5.1 Current course catalog listing: Production of vegetables that are particularly suited for Kentucky, considering variety selection, culture, harvesting, processing, and marketing.

5.2 Proposed course catalog listing: Production of fruit, vegetables, and grapes (wine and table) that are particularly suited for Kentucky, considering variety selection, management, harvesting, processing, and marketing.

5.3 Rationale for revision of course catalog listing: To accurately reflect course content by adding fruit and grape production to the catalog description.

6. Revise course credit hours:

6.1 Current course credit hours:

6.2 Proposed course credit hours:

6.3 Rationale for revision of course credit hours:

7. **Revise schedule type:**
   - 7.1 Current schedule type:
   - 7.2 Proposed schedule type:
   - 7.3 Rationale for revision of schedule type:

8. **Revise grade type:**
   - 8.1 Current grade type:
   - 8.2 Proposed grade type:
   - 8.3 Rationale for revision of grade type:

10. **Proposed term for implementation:** First available.

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

Department of Agriculture and Food Science	November 14, 2019
Ogden College Curriculum Committee	
Professional Education Council (if applicable)	
General Education Committee (if applicable)	
Undergraduate Curriculum Committee	
University Senate	

Proposal to Revise a program:
Ogden College of Science and Engineering
Department/Unit: Agriculture and Food Science

Section 1: Proponent Contact Information

1.1 Name/Title: Dr. Todd Willian/Professor
1.2 Email address: todd.willian@wku.edu
1.3 Phone # (270) 745-5969

Section 2: Program Information

2.1 Current Program reference number: 205

2.2 Current Program title: Associate Degree in Agricultural Technology and Management – General Agriculture Option

2.3 Current total number of credits required in the program: 60

Section 3: Proposed program revisions and rationales

3.1 First Proposed Revision: Inclusion of Animal Science (ANSC) and Agriculture Education (AGED) courses as approved elective courses. These courses were unintentionally omitted when the program was last revised and their addition will allow students greater flexibility in course offerings for this degree designed to offer a broad range of agricultural electives.

3.2 Second Proposed Revision: replacement of AGEC 360 (Agricultural Economics) with AGEC 160 (Introduction to Agribusiness and Agricultural Entrepreneurship). This revision will better serve students by providing a broader overview of Agribusiness as it relates to all agricultural sub-categories in comparison to AGEC 360 whose content is more narrowly focused upon the economics of agriculture and is predominantly utilized to gain prerequisite knowledge necessary for advanced Agribusiness courses.

Section 4: Consultations
Do any of the proposed revisions in section 3 above involve or in any other way impact other departments/units? YES **NO**

Section 5: Proposed term for implementation: First available.

Section 6: Approval Flow Dates:

Department of Agriculture and Food Science: November 14, 2019
Ogden College Curriculum Committee:
Professional Education Council:
Undergraduate Curriculum Committee:
University Senate:

Section 7: Required Appendices: Current & proposed program descriptions:

7.1 Current A.S. Degree in Agricultural Technology and Management

Required Agriculture Courses	**Credits**	**Notes**
AGRO 110: Introduction to Plant Science	3	
ANSC 140: Introduction to Animal Science	3	
AGMC 170: Intro. to Agric. Mechanization	2	
AGMC 171: Intro to Agric. Mech. Lab	1	
AGEC ~~360~~: Agricultural Economics	3	
AGRI 397: Agriculture Career Planning	1	
AGR0 350: Soils	3	
Additional hours selected from the following (AGEC, AGRI, HORT, AGRO, or AGMC)	12	
Required General Education Courses		
ENG 100: Introduction to College Writing	3	
COMM 145: Fund. Of Public Speaking & Com	3	
An Arts and Humanities course	3	
A Social and Behavioral course	3	
MATH 115 or MATH 116: College Algebra	3	
CHEM 105: Fundamentals of General Chemistry	3	
CHEM 106: Fund of General Chemistry Lab	1	
BIOL 120: Biological Concepts: Cells, Metabolism…	3	
BIOL 121: Biological Concepts Lab	1	
Electives to Complete 60 credit hours	9	
Total Credits Required	**60**	

7.2 Proposed A.S. Degree in Agricultural Technology and Management

Required Agriculture Courses	Credits	Notes
AGRO 110: Introduction to Plant Science	3	
ANSC 140: Introduction to Animal Science	3	
AGMC 170: Intro. to Agric. Mechanization	2	
AGMC 171: Intro to Agric. Mech. Lab	1	
AGEC **160**: Intro to Agribusiness and Agric....	3	
AGRI 397: Agriculture Career Planning	1	
AGR0 350: Soils	3	
Additional hours selected from the following (AGEC, AGRI, HORT, AGRO, **ANSC, AGED,** or AGMC)	12	
Required General Education Courses		
ENG 100: Introduction to College Writing	3	
COMM 145: Fund. Of Public Speaking & Com	3	
An Arts and Humanities course	3	
A Social and Behavioral course	3	
MATH 115 or MATH 116: College Algebra	3	
CHEM 105: Fundamentals of General Chemistry	3	
CHEM 106: Fund of General Chemistry Lab	1	
BIOL 120: Biological Concepts: Cells, Metabolism...	3	
BIOL 121: Biological Concepts Lab	1	
Electives to Complete 60 credit hours	9	
Total Credits Required	**60**	

Proposal to Revise a Program: Architectural Science
Ogden College
Department/Unit: School of Engineering and Applied Sciences

Section 1: Proponent Contact Information

1.1 Shahnaz Aly, Associate Professor
1.2 Email address:Shahnaz.aly@wku.edu
1.3 Phone # 270.745.5849

Section 2: Program Information

2.1 Current Program reference number: 518

2.2 Current Program title: Architectural Science

2.3 Current total number of credits required in the program: 81

Section 3: Proposed program revisions and rationales

3.1 Remove requirement of AMS 371 course required in the major. The course as it is currently set up deals with quality from the manufacturing perspective. Aspects of quality are covered in every course in the architectural science program. Faculty in the architectural science program refer to the National CAD standards to apply and educate students on expected drawing standards in their courses and building design, construction methodology standards are referenced from the AIA and applied in technical documentation courses.
3.2 Remove 11 hours of Architectural Science Electives. These are being reconfigured into the program.
3.3 Add 8 hours of Architectural Science Electives. Electives are selected from areas which enhance students perspectives in topics related to architectural science.
3.4 Add 6 hours of general electives. These have been provided to accommodate a vast number of students that transfer in courses from other universities. Courses to be transfrerred will be approved by the advisor.

Section 4: Consultations
Do any of the proposed revisions in section 3 above involve or in any other way impact other departments/units? NO

Section 5: Proposed term for implementation: Fall 2020

Section 6: Approval Flow Dates:

SEAS: **11/15/2019**
Odgen College Curriculum Committee:
Undergraduate Curriculum Committee:
University Senate:

Section 7: Required Appendices: Current & proposed program descriptions:

7.1 Current Program Requirement: 81 hours

Architectural Graphics	AMS 151	3
Architectural Drafting	AMS 163	3
Intro to Architecture	AMS 180	3
3D Modeling & Imaging	AMS 251	3
Construction Methods & Materials	AMS 261	3
Construction Methods & Materials Lab	AMS 262	1
Architectural Documentation I	AMS 263	3
Architectural Detailing	AMS 273	3
Architectural Structures	AMS 282	3
Building Codes	AMS 305	3
Survey of Building Systems	AMS 325	3
AMS 351 Building Info Modeling	AMS 351	3
Architectural Documentation II	AMS 363	3
Architectural Design Studio I	AMS 369	4
~~**Quality Assurance**~~	~~**AMS371**~~	~~**3**~~
Project Management	AMS390	3
Internship I	AMS398	1
Technology Mgmt./Sup./Team Blding	AMS430	3
Architectural Design Studio II	AMS 469	4
Comprehensive Design	AMS 488	3
Senior Research Architectural Science	AMS490A	3
Construction Management	CE 303	3
Business Writing or Technical Writing	ENG 306 or 307	3
Management Elective		3
~~**Architectural Science Electives**~~		~~**11**~~
Colonnade		39
F-W1	ENG 100	3
F-W2	ENG 300	3
F-AH	ENG 200	3
F- OC	COMM 145	3
F-QR	MATH 117	3
F-SB	HIST 101 or HIST 102	3
E-AH	SELECT	3
E-SB	ECON 150 OR ECON 202 OR ECON 203	3
E-NS/SL	SELECT	6
K-SC	SELECT	3
K-LG	SELECT	3
K-SY	SELECT	3

Program Grand Total Hours		120

7.2 Proposed Program Requirement: 81 hours

Architectural Graphics	AMS 151	3
Architectural Drafting	AMS 163	3
Intro to Architecture	AMS 180	3
3D Modeling & Imaging	AMS 251	3
Construction Methods & Materials	AMS 261	3
Construction Methods & Materials Lab	AMS 262	1
Architectural Documentation I	AMS 263	3
Architectural Detailing	AMS 273	3
Architectural Structures	AMS 282	3
Building Codes	AMS 305	3
Survey of Building Systems	AMS 325	3
AMS 351Building Info Modeling	AMS 351	3
Architectural Documentation II	AMS 363	3
Architectural Design Studio I	AMS 369	4
Project Management	AMS390	3
Internship I	AMS398	1
Technology Mgmt./Sup./Team Blding	AMS430	3
Architectural Design Studio II	AMS 469	4
Comprehensive Design	AMS 488	3
Senior Research Architectural Science	AMS490A	3
Construction Management	CE 303	3
Business Writing or Technical Writing	ENG 306 or 307	3
Management Elective		3
Architectural Science Electives		**8**
Electives		**6**
Colonnade		39
F-W1	ENG 100	3
F-W2	ENG 300	3
F-AH	ENG 200	3
F- OC	COMM 145	3
F-QR	MATH 117	3
F-SB	HIST 101 or HIST 102	3
E-AH	SELECT	3
E-SB	ECON 150 OR ECON 202 OR ECON 203	3
E-NS/SL	SELECT	6
K-SC	SELECT	3
K-LG	SELECT	3
K-SY	SELECT	3
Program Grand Total Hours		120

BACHELOR of SCIENCE in ARCHITECTURAL SCIENCE (#518)
School of Engineering & Applied Sciences
Ogden College of Science and Engineering
Western Kentucky University

The suggested program of study shown below should be used in consultation with your advisor(s). Every student will finish with a unique plan of his/her own depending on the electives selected.

SAMPLE - 4 Year Plan

FIRST YEAR	Fall Semester		Spring Semester	
	AMS 151 – Architectural Graphics	3	AMS 163 – Architectural Drafting	3
	AMS 180 – Architecture & Civilization	3	AMS 261 & 262 – Construction Methods and Materials (with a Lab)	4
	MATH 117 – Trigonometry (F-QR)	3	ENG 200 Intro to Literature (F-AH)	3
	ENG 100 Intro to College Writing (F-WI)	3	Arts and Humanities (E-AH)	3
	HIST 101 World History I OR HIST 102 World History II (F-SB)	3	Natural & Physical Science (E-NS)	3
	TOTAL CREDIT HOURS	**15**	**TOTAL CREDIT HOURS**	**16**

SECOND YEAR	Fall Semester		Spring Semester	
	AMS 251 – 3D Modeling & Imaging	3	AMS 273 – Architectural Detailing	3
	AMS 263 – Architecture Documentation I	3	Architectural Elective	2
	AMS 305 – Building Codes	3	COMM 145 Fundamentals of Public Speaking (F-OC)	3
	ECON 202 – Principles of Economics (E-SB)	3	AMS 325 – Survey of Building Systems	3
	AMS 282 – Architectural Structures	3	AMS 369 – Design Studio I	4
	TOTAL CREDIT HOURS	**15**	**TOTAL CREDIT HOURS**	**15**

World Language Proficiency: All students entering in Fall 2014 or later must demonstrate proficiency in a world language at the Novice High level before completing 60 credit hours. Novice high is the ability to communicate in writing and speaking on familiar topics in simple sentences. To meet this requirement, students may take college language courses or take a proficiency test. For more information go to www.wku.edu/modernlanguages/placement/.

Colonnade Plan: All students entering in fall 2014 or later must complete 39 hours in 13 specific Colonnade areas. Colonnade areas are listed in parentheses marked in blue after the corresponding classes. Some areas may have specific course requirements while others can be chosen from selected lists of options. For more details and to see lists of options, go to http://www.wku.edu/colonnade/documents/approved_colonnade_courses_webs te.pdf

THIRD YEAR	Fall Semester		Spring Semester	
	AMS 363 – Architecture Documentation II	3	Elective	3
	CE 303 – Construction Management	3	AMS 390 – Project Management	3
	Architectural Elective	3	ENG 306 or 307	3
	Connections: Social and Cultural (K-SC)	3	AMS 351- Building Informational Modeling	3
	ENG 300 Writing in the Disciplines (F-W2)	3	Connections: Local to Global Course (K-LG)	3
	TOTAL CREDIT HOURS	**15**	**TOTAL CREDIT HOURS**	15

FOURTH YEAR	Fall Semester		Spring Semester	
	AMS 469 – Architectural Design Studio II	4	AMS 430: Tech Management/Supervision	3
	AMS 488 – Comprehensive Design	3	AMS 490A – Senior Research Architectural Science	3
	Architectural Elective	3	Connections Course	3
	Management Elective	3	Elective	3
	AMS 398 - Internship	1	Natural & Physical Science (E-NS,LS)	3
	TOTAL CREDIT HOURS	**14**	**TOTAL CREDIT HOURS**	15
				Total Credit Hours: 120

PLEASE NOTE: *Prerequisites, Course Numbers, and Course Titles are subject to change. Consult your advisor each semester.*

For more information:

School of Engineering & Applied Sciences
Website: www.wku.edu/seas
Phone: 270-745-3251
Email: ams@wku.edu
Course Descriptions: http://www.wku.edu/undergraduatecatalog/

Proposal Date: 10/11/2019

Ogden College
School of Engineering and Applied Sciences
Proposal to Create a New Certificate Program
(Action Item)

Contact Person: Warren Campbell, warren.campbell@wku.edu, 5-8988

1. Identification of program:

1.1 Program title: Floodplain Management

1.2 Required hours in program: 14

1.3 Special information: Transformation of Floodplain Management Minor

1.4 Catalog description: This certificate has been coordinated with the Geography and Geology Department and with the Kentucky Association of Mitigation Managers. The Floodplain Management certificate requires completion of 14 semester hours. Students develop familiarity with federal floodplain management regulations, the National Flood Insurance Program, hydrology, surveying, and Geographic Information Systems that are critical to administering an aggressive floodplain management program. Completion of the certificate requires familiarity with all aspects of floodplain management and with the impacts of floods on individuals, on property, and on regional or national economics. Students successfully completing the program are encouraged to take the Certified Floodplain Manager (CFM) exam. The CFM is a nationally recognized certification and is considered a desirable qualification by many employers. Required courses for the certificate are CE 160/CE 161, CE 300, GISC 316, and CE 461 or GEOG 310/GEOL 310.

1.5 Classification of Instructional Program Code (CIP):

2. Learning outcomes of the proposed certificate program:

1. Students will demonstrate a familiarity with the National Flood Insurance Program (NFIP) and associated Federal regulations.
2. Students will be able to perform the land surveys required to develop NFIP elevation certificates used in floodplain management.
3. Students will be able to use Flood Insurance Rate Maps (FIRMs) and Flood Insurance Studies to determine flood elevations anywhere in the U.S.
4. Students will be able to use, create, and apply GIS data used for floodplain management.
5. Students will be able to develop basic watershed models used to determine flood discharges.
6. Students should be able to pass the Certified Floodplain Manager exam.

3. Rationale:

3.1 Reason for developing the proposed certificate program: Floods are the natural disaster with the greatest loss of life and property. As the climate changes, more and more catastrophic floods can be expected. In 2005 Hurricane Katrina caused more than $100B in damages and 1833 deaths. The cost just in property losses was about $300 for every man, woman, and child in the U.S. Mistakes were made at the Federal, state, and local level in recovery efforts. It was estimated that 20 % of the 1833 casualties died because government agencies could not get food, water, and medical supplies to an American city for 4 days. The more people who are aware of basic principles of floodplain management, the less likely these catastrophic mistakes. By Federal law, each NFIP participating community must designate a floodplain administrator. There are more than 22,000 NFIP participating communities but only about 11,000 Certified Floodplain

Managers. This certificate would help develop professionals required for a critical national need.

3.2 Relationship of the proposed certificate program to other programs now offered by the department: It is related to WKU's Floodplain Management Minor which was the 1st in the country but was deleted by CAPE even though it gave WKU national credibility with the floodplain management community.

3.3 Relationship of the proposed certificate program to certificate programs offered in other departments: N/A

3.4 Projected enrollment in the proposed certificate program: 5 to 10

3.5 Similar certificate programs offered elsewhere in Kentucky and in other states (including programs at benchmark institutions): No other university offers a certificate program although the University of Florida is exploring the possibility and the University of Washington has a Planning Master's degree with floodplain management concentration.

3.6 Relationship of the proposed certificate program to the university mission and objectives: By helping prepare our students for careers in floodplain management it allows them "to be productive, engaged, and socially responsible citizen-leaders in a global society." Floodplain management, more than most fields, is multidisciplinary requiring a combination of technical expertise combined with a socially responsive capability to communicate risk to those most vulnerable and least aware of their flood risk.

4. Curriculum:

CE 160 Principles of Surveying (3)
CE 161 Principles of Surveying Lab (1)
CE 300 Floodplain Management (3)
CE 461 Hydrology (3) or GEOG/GEOL 310 Global Hydrology (3)
GISC 316 Fundamentals of Geographic Information Systems (4)

5. Budget implications: None. All courses are currently taught with or without this certificate program.

6. Proposed term for implementation: Fall 2020

7. Dates of prior committee approvals:

SEAS / Unit CE Program	11/15/2019
Ogden College Curriculum Committee	
Contact with Office of Academic Affairs	
Professional Education Council (if applicable)	
Undergraduate Curriculum Committee	
University Senate	
Board of Regents	

Proposal Date: October 16, 2019

Ogden College
School of Engineering and Applied Sciences
Proposal to Make Multiple Revisions to a Course
(Action Item)

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

1. Identification of course:

1.1 Current course prefix (subject area) and number: CS 339

1.2 Course title: Computer Science III

2. Revise course title:

2.1 Current course title:
Computer Science III

2.2 Proposed course title:
Discrete Structures

2.3 Proposed abbreviated title:
Discrete Structures

2.4 Rationale for revision of course title:
Discrete Structures reflects the content of the course.

4. Revise course prerequisites/corequisites/special requirements:

4.1 Current prerequisites requirements:
Grades of "C" or better in both CS 221 and MATH 136

4.2 Proposed prerequisites/corequisites/special requirements:
Grades of "C" or better in both CS 290 and MATH 136

4.3 Rationale for revision of course prerequisites/corequisites/special requirements:
The original CS 180 and CS 221 courses have been splitted into CS 180, CS 290 and CS 331. CS 221 will not be offered in future. The prerequisite change reflects the current CS curriculum.

4.4 Effect on completion of major/minor sequence:
None

10. Proposed term for implementation: Fall 2020

11. Dates of prior committee approvals:

School of Engineering and Applied Sciences 11/15/2019

Ogden College Curriculum Committee _____

Undergraduate Curriculum Committee _____

University Senate _____

(Action Item)

Proposal to Create a New Course:
Ogden College of Science & Engineering
Department/Unit: School of Engineering and Applied Science

Section 1: Proponent Contact Information

1.1 Name/Title: Michael Galloway/Assistant Professor
1.2 Email address: Jeffrey.galloway@wku.edu
1.3 Phone #2707452859

Section 2: Course Catalog Information

2.1 Course prefix (subject area) and number: CS 301

2.2 Course CIP code: 11.0202

2.3 Course title: Game Programming

2.4 Abbreviated Course title: Game Programming

2.5 Credit hours/Variable credit: 3

2.6 Repeatability: N/A

2.7 Course Term: Is this course intended to span more than a single term?

NO

2.1 Course Catalog Description: An introductory study of game software development including game object creation, animation, audio, game logic, and game engines. Design, prototyping, and development of a playable game using modern techniques will be covered. Maynot be counted toward a computer science major or minor.

2.8 Prerequisite/Corequisites/Restrictions:
Prerequisites: CS 146 or CS 170 or CS 180 or CS 239 with a grade of "C" or better and ART 244 with a grade of "C" or better.

2.9 Additional Enrollment Requirements: N/A

2.10 Other Special Course Requirements: N/A

2.11 Grade Type: standard A-F final grade

2.12 Schedule Type: Lecture/Lab

Section 3: Description of proposed course

3.1 Course Content Summary: This course will apply modern techniques for game development using a game engine: game objects, game animation and movement, sound generation, event driven programming, platform-based game design and development, game logic, and collision events. The course will also discuss game development, game storyboarding, and advanced game software concepts such as artificial intelligence, game physics, and network/multiplayer games.

3.2 Learning Outcomes:

- Understanding of basic game development
- Understanding of game design
- Understanding of game storyboarding
- Use of a modern game engine to create interesting game levels
- Understand the fundamentals of using 2D and 3D graphics
- Become familiar with advanced topics such as physics, AI, and Network based games.
- Apply concepts to develop and test an actual game

3.3 Assessment/Evaluation: Students will complete a series of homework assignments, projects related to game development, and exams.

Section 4: Rationale

4.1 Reason for developing this proposed course: This course is being developed to be included in the newly proposed Game Design Certificate, a joint effort between the Computer Science Progam, and Departments of Art and Communication. This course will be the second programming course within the certificate program with a focus on game software development.

4.2 Relationship to similar courses offered by other university departments/units:

- Do any other courses already being offered by other university departments/units share content with this proposed course? NO
- Are any of the proposed pre/co-requisites for this course offered by another university department/unit? NO
- If the answer to both questions is NO, simply proceed to item 5.
- If the answer to either of those questions is YES, indicate here who in the affected departments/units was consulted, and the dates of those consultations:

Section 5: Projected Enrollments/Resources

5.1 How many students per section are expected to enroll in this proposed course?

15-20, based on the enrollment of ART 244

5.2 How many sections of this course per academic year will be offered?

1 per year

5.3 How many students per academic year are expected to enroll?

15-20

5.4 How were these projections calculated? Explain any supporting evidence/data you have for arriving at these projections.

5.5 Proposed method of staffing: Current staffing is sufficient

5.6 **Instructional technology resources:** Current technology resources are sufficient

5.7 Library resources: Will this proposed course require the use of library resources (books, journals, reference materials, audio-visual materials, electronic databases, etc.)? NO

If YES, was a Library Resources Form submitted to the appropriate collection development librarian prior to consideration at the college curriculum level?

Section 6: Proposed term for implementation: Earliest semester after approval

Section 7: Supplemental/Supporting Documentation: None

(Action Item)

Proposal to Create a New Course:
Ogden College of Science & Engineering
Department/Unit: School of Engineering and Applied Science

Section 1: Proponent Contact Information

1.1 Name/Title: Zhonghang Xia/Professor
1.2 Email address: zhonghang.xia@wku.edu
1.3 Phone #2707456459

Section 2: Course Catalog Information

2.1 Course prefix (subject area) and number: CS 290

2.2 Course CIP code: 11.0201

2.3 Course title: Computer Science II

2.4 Abbreviated Course title: Computer Science II

2.5 Credit hours/Variable credit: 4

2.6 Repeatability: N/A

2.7 Course Term: Is this course intended to span more than a single term?

NO

2.1 Course Catalog Description: A study of object-oriented software development and programming concepts including inheritance, polymorphism, stack, queue, list, and introduction to recursion and their applications, including user-interface design.

2.8 Prerequisite/Corequisites/Restrictions: A grade of "C" or better in CS 180 and eligibility to enroll in a calculus course based on criteria developed by the Department of Mathematics.

2.9 Additional Enrollment Requirements: N/A

2.10 Other Special Course Requirements: N/A

2.11 Grade Type: standard A-F final grade

2.12 Schedule Type: Lecture/Lab

Section 3: Description of proposed course

3.1 Course Content Summary: This course will introduce Intermediate object-oriented programming concepts and practice: two-dimensional arrays, inheritance and polymorphism, abstract class and interface, exception handling, abstract data types, stack ADT, queue ADT, list ADT, recursion, applications using map. The course will also discuss Software development, testing and debugging and the efficiency and alternative considerations of the basic data structures.

3.2 Learning Outcomes:

- Understand and apply the principles in object-oriented design.
- Come up with meaningful algorithmic solutions for problems.
- Design meaningful algorithmic solutions which efficiently apply appropriate basic data structures, such as stack, queue, lists.
- Write referenced-based and array-based implementations of important ADT.
- Select appropriate control structures when needed to solve specific problems.
- Appreciate good object-oriented design, including inheritance and polymorphism, and be able to list some criteria for good object-oriented design.

3.3 Assessment/Evaluation: Students will complete a series of homework assignments, projects, and exams.

Section 4: Rationale

4.1 Reason for developing this proposed course: Along with the rapid development of software, new functionalities and components have been added into JAVA. As a result, the current course design of CS 180 and CS 221 cannot adapt to students' learning with JAVA in two semesters. We propose new course CS 290 (Computer Science II) to introduce the concept and implementation of inheritance and polymorphism and basic data structures, and new course CS 331 (Introduction to data structures) to introduce advanced data structures.

4.2 Relationship to similar courses offered by other university departments/units:

- Do any other courses already being offered by other university departments/units share content with this proposed course? NO
- Are any of the proposed pre/co-requisites for this course offered by another university department/unit? NO
- If the answer to both questions is NO, simply proceed to item 5.

- If the answer to either of those questions is YES, indicate here who in the affected departments/units was consulted, and the dates of those consultations:

Section 5: Projected Enrollments/Resources

5.1 How many students per section are expected to enroll in this proposed course?

20-30 students

5.2 How many sections of this course per academic year will be offered?

4 sections

5.3 How many students per academic year are expected to enroll?

80-120 students

5.4 How were these projections calculated? Explain any supporting evidence/data you have for arriving at these projections.

Based on student enrollment in CS 180

5.5 Proposed method of staffing: Current staffing is sufficient

5.6 **Instructional technology resources:** Current technology resources are sufficient

5.7 Library resources: Will this proposed course require the use of library resources (books, journals, reference materials, audio-visual materials, electronic databases, etc.)? NO

If YES, was a Library Resources Form submitted to the appropriate collection development librarian prior to consideration at the college curriculum level?

Section 6: Proposed term for implementation: Earliest semester after approval

Section 7: Supplemental/Supporting Documentation: None

(Action Item)

Proposal to Create a New Course:
Ogden College of Science & Engineering
Department/Unit: School of Engineering and Applied Science

Section 1: Proponent Contact Information

1.1 Name/Title: Zhonghang Xia/Professor
1.2 Email address: zhonghang.xia@wku.edu
1.3 Phone #2707456459

Section 2: Course Catalog Information

2.1 Course prefix (subject area) and number: CS 331

2.2 Course CIP code: 11.0201

2.3 Course title: Data Structures

2.4 Abbreviated Course title: Data Structures

2.5 Credit hours/Variable credit: 3

2.6 Repeatability: N/A

2.7 Course Term: Is this course intended to span more than a single term?

NO

2.1 Course Catalog Description: Analysis and efficient implementation of container types and applications such as priority queues, hash tables, search trees, and graphs; sorting algorithms.

2.8 Prerequisite/Corequisites/Restrictions:
Prerequiaite: A grade of "C" or better in CS 290.

2.9 Additional Enrollment Requirements: N/A

2.10 Other Special Course Requirements: N/A

2.11 Grade Type: standard A-F final grade

2.12 Schedule Type: Lecture

Section 3: Description of proposed course

3.1 Course Content Summary: This course will introduce complex data structures, such as binary search tree, priority queues, heaps, graph and

graph representation. Students will study basic algorithms, such as sorting, hashing and searching, based on the data structures which have been covered. The efficiency comparison between different algorithms, algorithm design and development will also be discussed.

3.2 Learning Outcomes:

- Introduce students to basic concepts of complex data structures, such as binary search tree, priority queues, heaps, hashing, and graphs, and their algorithms.
- Introduce students to different sorting algorithms: bubble sorting and insertion sort revisited, quick sort, merge sort, heap sort.
- Introduce students to basic concepts of Big-O notations and analysis.
- Able to design meaningful algorithmic solutions which efficiently apply appropriate complex data structures, such as binary search tree, priority queues, heaps, and graphs.
- Able to describe the purpose of simple recursive algorithms and write simple recursive algorithms.

3.3 Assessment/Evaluation: Students will complete a series of homework assignments, projects, and exams.

Section 4: Rationale

4.1 Reason for developing this proposed course: Along with the rapid development of software, new functionalities and components have been added into JAVA. As a result, the current course design of CS 180 and CS 221 cannot adapt to students' learning with JAVA in two semesters. We propose new course CS 290 (Computer Science II) to introduce the concept and implementation of inheritance and polymorphism and basic data structures, and new course CS 331 (Data Structures) to introduce advanced data structures.

4.2 Relationship to similar courses offered by other university departments/units:

- Do any other courses already being offered by other university departments/units share content with this proposed course? NO
- Are any of the proposed pre/co-requisites for this course offered by another university department/unit? NO
- If the answer to both questions is NO, simply proceed to item 5.
- If the answer to either of those questions is YES, indicate here who in the affected departments/units was consulted, and the dates of those consultations:

Section 5: Projected Enrollments/Resources

5.1 How many students per section are expected to enroll in this proposed course?

30 students

5.2 How many sections of this course per academic year will be offered?

2 sections

5.3 How many students per academic year are expected to enroll?

60 students

5.4 How were these projections calculated? Explain any supporting evidence/data you have for arriving at these projections.

Based on student enrollment in CS 180 and CS 290

5.5 Proposed method of staffing: Current staffing is sufficient

5.6 **Instructional technology resources:** Current technology resources are sufficient

5.7 Library resources: Will this proposed course require the use of library resources (books, journals, reference materials, audio-visual materials, electronic databases, etc.)? NO

If YES, was a Library Resources Form submitted to the appropriate collection development librarian prior to consideration at the college curriculum level?

Section 6: Proposed term for implementation: Earliest semester after approval

Section 7: Supplemental/Supporting Documentation: None.

Proposal to Revise a program: Computer Science
Ogden College
Department/Unit: School of Engineering and Applied Sciences

Section 1: Proponent Contact Information

1.1 Name/Title: Huanjing Wang, Professor
1.2 Email address: huanjing.wang@wku.edu
1.3 Phone #: 745-2672

Section 2: Program Information

2.1 Current Program reference number: 341

2.2 Current Program title: Minor in Computer Science

2.3 Current total number of credits required in the program: 20

Section 3: Proposed program revisions and rationales

3.1 Remove CS 221 and add CS 290
The original CS 180 and CS 221 courses have been splitted into three courses, CS 180, CS 290, and CS 331. This will help students better understand the foundations of computer science and improve the retention rate. CS 290 will be required in minor.

Section 4: Consultations:

Do any of the proposed revisions in section 3 above involve or in any other way impact other departments/units? NO

Section 5: Proposed term for implementation: Fall 2020.

Section 6: Approval Flow Dates:

School of Engineering and Applied Sciences	11/15/2019
Ogden College Curriculum Committee	
Undergraduate Curriculum Committee	
University Senate	

Section 7: Required Appendices: Current & proposed program descriptions:.

7.1 Current program requirement:

The following 20 credit-hour program leads to a minor in computer science. All CS courses counting toward the CS program minor must be completed with a grade of "C" or better:
1. Completion of the following two required courses (8 hours): CS 180 and ~~CS 221~~.
2. Completion of one of the following courses: CS 339 or CS 351.
3. Completion of 9 additional hours of CS courses at the 300-level or higher

7.2 Proposed program requirements:

The following 20 credit-hour program leads to a minor in computer science. All CS courses counting toward the CS program minor must be completed with a grade of "C" or better:
1. Completion of the following two required courses (8 hours): CS 180 and **CS 290**.
2. Completion of one of the following courses: CS 339 or CS 351.
3. Completion of 9 additional hours of CS courses at the 300-level or higher

Proposal to Revise a program: Computer Science
Ogden College
Department/Unit: School of Engineering and Applied Sciences

Section 1: Proponent Contact Information

1.1 Name/Title: Huanjing Wang, Professor
1.2 Email address: huanjing.wang@wku.edu
1.3 Phone #: 745-2672

Section 2: Program Information

2.1 Current Program reference number: 629/629P

2.2 Current Program title: Computer Science

2.3 Current total number of credits required in the program: 44-50

Section 3: Proposed program revisions and rationales

3.1 Remove CS 221 and add CS 290 and CS 331 to CS requirements in all options
The original CS 180 and CS 221 courses have been splitted into three courses, CS 180, CS 290, and CS 331. This will help students better understand the foundations of computer science and improve the retention rate.

3.2 Change 629P to "To be admitted to the computer science major, students must complete CS 180, CS 290, and CS 331 with grades of C or better"
The original CS 180 and CS 221 courses have been splitted into three courses, CS 180, CS 290, and CS 331. This will help students better understand the foundations of computer science and improve the retention rate.

3.3 Change any minor option to general option and remove any minor requirement in the general option. Add one more CS elective to general option. Add Stat 301 to the core course list. Change the total hours of the general option to 53.

Any minor option is changed to general option by removing the minor requirements and adding one more elective course to get the total of 53 hours, which satisfies WKU major with no minor requirements. In this way, students can take more CS courses and we believe it will help to improve employment rate.

3.4 Remove the specialty concentration
Very few students take this option. Students can take general option and any major, minor, or certificate if they want to.

3.5 Systems/scientific applications concentration:
Change the total hours of systems/scientific applications concentration to 53.
Change science requirements from 11 hours to 7 hours.
Remove the requirements of "One additional Math Elective or one additional science course designed for science/engineering majors"

Add Stat 401 and Stat 402 to Math elective list

The original CS 180 and CS 221 courses have been splitted into three courses, CS 180, CS 290, and CS 331. These changes also reflect the new ABET requirements.

Section 4: Consultations: N/A
Do any of the proposed revisions in section 3 above involve or in any other way impact other departments/units? NO

Section 5: Proposed term for implementation: Fall 2020.

Section 6: Approval Flow Dates:

School of Engineering and Applied Sciences	11/15/2019
Ogden College Curriculum Committee	
Undergraduate Curriculum Committee	
University Senate	

Section 7: Required Appendices: Current & proposed program descriptions:

7.1 Current program requirement:

The major in computer science requires a minimum of ~~44~~-semester hours. To be admitted to the computer science major, students must complete ~~CS 180, 221, and CS 339~~ with grades of C or better. In addition, all CS courses counting toward the CS program major must be completed with a grade of "C" or better. Computer Science electives may include from 0-3 hours of 200-level courses. Students must adhere to all University Policies as indicated in the WKU catalog section "Academic Information." Additional requirements are as follows:

Systems/Scientific Applications Concentration

Requirements:

CS 180 Computer Science I	4
~~**CS 221 Computer Science II**~~	~~**4**~~
CS 325 Computer Organization and Architecture	3
CS 339 Computer Science III	3
CS 351 Database Management Systems I	3
CS 360 Software Engineering	3
CS 382 Programming Languages	3
CS 396 Intermediate Software Project	3
CS 421 Data Structures and Algorithm Analysis	3
CS 425 Operating Systems I	3
CS 496 Senior Project and Professional Practice	3
CS Elective*	3
CS Elective*	3
CS Elective*	3
CS Elective*	3
STAT 301 Probability and Applied Statistics	3
Technical Course Total	~~**50**~~

Other requirements:

MATH 136 Calculus I	4
ENG 307 Technical Writing	3
Math Elective*	3 or 4
Math Elective*	3
~~**Two natural science courses (at least 6 hrs; at least one course must include a lab) laboratory science (a two semesters sequence of the same science) and one additional science course (all must be designed for Science/Engineering majors).**~~	~~**11**~~
~~**One additional Math Elective* or one additional science course designed for science/engineering majors.**~~	~~**3**~~
Other Hours Total	~~**27 or 28**~~

List of Courses to Satisfy CS Elective*

CS 372 Mobile App Development	3
CS 381 Introduction to Computer Networks	3
CS 443 Database Management Systems	3
CS 445 Operating Systems II	3
CS 446 Interactive Computer Graphics	3

CS 450 Computer Networks	3
CS 456 Artificial Intelligence	3
List of Courses to Satisfy Math Elective*	
MATH 137 Calculus II	4
MATH 305 Introduction to Mathematical Modeling	3
MATH 307 Introduction to Linear Algebra	3
MATH 331 Differential Equations	3
MATH 405 Numerical Analysis I	3
MATH 406 Numerical Analysis II	3
MATH 470 Introduction to Operations Research	3
MATH 473 Introduction to Graph Theory	3

~~**Any Minor Option**~~

Requirements:

CS 180 Computer Science I	4
~~**CS 221 Computer Science II**~~	~~**4**~~
CS 325 Computer Organization and Architecture	3
CS 339 Computer Science III	3
CS 351 Database Management Systems I	3
CS 360 Software Engineering	3
CS 382 Programming Languages	3
CS 396 Intermediate Software Project	3
CS 421 Data Structures and Algorithm Analysis	3
CS 425 Operating Systems I	3
CS 496 Senior Project and Professional Practice	3
CS Elective* 200-level or above (excluding CS 226 and 257)	3
CS Elective* 300-level or above	~~3~~
CS Elective* 400-level or above	3
Technical Course Total	~~44~~

Other requirements:

MATH 136 Calculus I	4
ENG 307 Technical Writing	3
~~**STAT 301 Probability and Applied Statistics**~~	~~**3**~~
~~**Completion of any additional minor/major**~~	

CS Elective*

At most 1.5 hours of credit for CS 239 may count towards the major. At most 3 hours of credit for CS 239 and 245 (only for languages for which credit is not received through another course) may count towards the major.

~~**Specialty Concentration**~~

~~**Requirements:**~~

~~**CS 180 Computer Science I 4**~~

~~**CS 221 Computer Science II 4**~~

~~**CS 325 Computer Organization and Architecture 3**~~

~~CS 339 Computer Science III 3~~
~~CS 351 Database Management Systems I 3~~
~~CS 360 Software Engineering 3~~
~~CS 381 Introduction to Computer Networks 3~~
~~CS 382 Programming Languages 3~~
~~CS 396 Intermediate Software Project 3~~
~~CS 421 Data Structures and Algorithm Analysis 3~~
~~CS 425 Operating Systems I 3~~
~~CS 443 Database Management Systems 3~~
~~CS 496 Senior Project and Professional Practice 3~~
~~CS Elective* 200 level or above (excluding CS 226 and 257)~~
~~3~~
~~CS Elective* 300 level or above 3~~
~~CS Elective* 400 level or above 3~~
~~Technical Course Total 50~~

~~Other requirements:~~
~~MATH 136 Calculus I 4~~
~~ENG 307 Technical Writing 3~~
~~STAT 301 Probability and Applied Statistics 3~~
~~An additional 18 hours of specialty courses, selected in consultation with a CS advisor, not used to satisfy specific other graduation requirements for the CS major or for the Colonnade Program, including 9 hours of which are at the 300 level or above. 18~~
~~Other Hours Total 28~~

~~CS Elective*~~
~~At most 1.5 hours of credit for CS 339 may count towards the major. At most 3 hours of credit for CS 239 and 245 (only for languages for which credit is not received through another course) may count towards the major.~~

7.2 Proposed program requirement:

The major in computer science requires a minimum of **53** semester hours. To be admitted to the computer science major, students must complete **CS 180, CS 290, and CS 331** with grades of C or better. In addition, all CS courses counting toward the CS program major must be completed with a grade of "C" or better. Computer Science electives may include from 0-3 hours of 200-level courses. Students must adhere to all University Policies as indicated in the WKU catalog section "Academic Information." Additional requirements are as follows:

Systems/Scientific Applications Concentration

Requirements:

CS 180 Computer Science I	4
CS 290 Computer Science II	**4**
CS 331 Computer Science III	**3**
CS 325 Computer Organization and Architecture	3
CS 339 Discrete Structures	3
CS 351 Database Management Systems I	3
CS 360 Software Engineering	3
CS 382 Programming Languages	3
CS 396 Intermediate Software Project	3
CS 421 Data Structures and Algorithm Analysis	3
CS 425 Operating Systems I	3
CS 496 Senior Project and Professional Practice	3
CS Elective*	3
CS Elective*	3
CS Elective*	3
CS Elective*	3
STAT 301 Probability and Applied Statistics	3
Technical Course Total	**53**

Other requirements:

MATH 136 Calculus I	4
ENG 307 Technical Writing	3
Math Elective*	3 or 4
Math Elective*	3
Two natural science courses (at least 6 hrs; at least one course must include a lab) designed for Science/Engineering majors	**7**
Other Hours Total	**20 or 21**

List of Courses to Satisfy CS Elective*

CS 372 Mobile App Development	3
CS 381 Introduction to Computer Networks	3
CS 443 Database Management Systems	3
CS 445 Operating Systems II	3
CS 446 Interactive Computer Graphics	3
CS 450 Computer Networks	3
CS 456 Artificial Intelligence	3

List of Courses to Satisfy Math Elective*

MATH 137 Calculus II	4
MATH 305 Introduction to Mathematical Modeling	3
MATH 307 Introduction to Linear Algebra	3
MATH 331 Differential Equations	3
MATH 405 Numerical Analysis I	3
MATH 406 Numerical Analysis II	3
MATH 470 Introduction to Operations Research	3
MATH 473 Introduction to Graph Theory	3
STAT 401 Regression Analysis	**3**
STAT 402 Experimental Design	**3**

General Option

Requirements:

CS 180 Computer Science I	4
CS 290 Computer Science II	**4**
CS 331 Computer Science III	**3**
CS 325 Computer Organization and Architecture	3
CS 339 Discrete Structures	3
CS 351 Database Management Systems I	3
CS 360 Software Engineering	3
CS 382 Programming Languages	3
CS 396 Intermediate Software Project	3
CS 421 Data Structures and Algorithm Analysis	3
CS 425 Operating Systems I	3
CS 496 Senior Project and Professional Practice	3
CS Elective* 200-level or above (excluding CS 226 and 257)	3
CS Elective* 300-level or above	**6**
CS Elective* 400-level or above	3
STAT 301	3
Technical Course Total	**53**

Other requirements:

MATH 136 Calculus I	4
ENG 307 Technical Writing	3

CS Elective*

At most 1.5 hours of credit for CS 239 may count towards the major. At most 3 hours of credit for CS 239 and 245 (only for languages for which credit is not received through another course) may count towards the major.

Remove the Specialty Concentration

WKU	**BACHELOR of SCIENCE in COMPUTER SCIENCE – General OPTION (#629)** School of Engineering and Applied Sciences Ogden College of Science and Engineering Western Kentucky University
	The suggested program of study shown below should be used in consultation with your advisor(s). Every student will finish with a unique plan of his/her own depending on the electives selected. To be admitted to the computer science major, students must complete CS 180, CS 290, and CS 331 with grades of C or better. In addition, all CS courses counting toward the CS program major must be completed with a grade of "C" or better. Computer Science electives may include from 0-3 hours of 200-level courses. Students must adhere to all University Policies as indicated in the WKU catalog section "Academic Information."

SAMPLE – Finish in Four Plan

FIRST YEAR			
Fall Semester		**Spring Semester**	
CS180: Computer Science 1	4	CS290: Computer Science II	4
Arts & Humanities Elective (F-AH)	3	MATH136: Calculus I (F-QR)	4
ENG100: Freshman English (F-W1)	3	COMM 145: Public Speaking (F-OC)	3
Natural and Physical Science & Lab (F-NS, LS)	4	Free Elective	3
Free Elective	2		
TOTAL CREDIT HOURS	16	**TOTAL CREDIT HOURS**	14

SECOND YEAR			
Fall Semester		**Spring Semester**	
CS 331 Data Structures	3	CS351: Intro to Database Systems	3
ENG307: Technical Writing	3	World History (F-SB)	3
Literary Studies (F-AH)	3	CS325: Computer Organization and Architecture	3
CS 2xx Elective	3	Free Elective	3
STAT301: Prob/Applied Stats	3	CS 339: Discrete Structures	3
TOTAL CREDIT HOURS	15	**TOTAL CREDIT HOURS**	15

THIRD YEAR			
Fall Semester		**Spring Semester**	
Natural and Physical Science (E-NS)	3	CS382: Programming Languages	3
CS396: Intermediate Software Project	3	CS 3xx Elective	3
CS 360: Software Engineering	3	Social & Behavioral Sciences (E-SB)	3
CS 3xx Elective	3	Free Elective	3
ENG300: Writing in the Disciplines (F-W2)	3	World Language (if needed) or general elective	3
TOTAL CREDIT HOURS	**15**	**TOTAL CREDIT HOURS**	15

FOURTH YEAR			
Fall Semester		**Spring Semester**	
CS425: Operating Systems I	3	CS496: CS Project and Professional Practice	3
Free Elective	3	CS 4xx Elective	3
Connections Systems (K-SY)	3	Free Elective	3
CS421: Data Structures and Algorithm Analysis	3	Connections Local to Global (K-LG)	3
Connections Social & Cultural (K-SC)	3	Free Elective	3
TOTAL CREDIT HOURS	**15**	**TOTAL CREDIT HOURS**	15

Total Credit Hours: 120

For more details and courses offered in the Colonnade General Education program visit the website.

World Language Requirement: Language Proficiency of novice-high before completing 60 credit hours is required (or completion of 2nd level of a language). Two credits (or equivalent) of a single world language in High School satisfies this WKU requirement.

For more Information:

School of Engineering & Applied Sciences

Website: www.wku.edu/seas

Phone: 270-745-3251

Email: seas@wku.edu

Course Descriptions: http://www.wku.edu/undergraduatecatalog/

WKU	**BACHELOR of SCIENCE in COMPUTER SCIENCE – SYSTEMS/SCIENTIFIC APPLICATIONS CONCENTRATION (#629)** School of Engineering and Applied Sciences Ogden College of Science and Engineering Western Kentucky University
	The suggested program of study shown below should be used in consultation with your advisor(s). Every student will finish with a unique plan of his/her own depending on the electives selected. To be admitted to the computer science major, students must complete CS 180, CS 290, and CS 331 with grades of C or better. In addition, all CS courses counting toward the CS program major must be completed with a grade of "C" or better. Computer Science electives may include from 0-3 hours of 200-level courses. Students must adhere to all University Policies as indicated in the WKU catalog section "Academic Information."

SAMPLE – Finish in Four Plan

FIRST YEAR			
Fall Semester		**Spring Semester**	
CS180: Computer Science 1	4	CS290: Computer Science II	4
World History (F-SB)	3	MATH136: Calculus I (F-QR)	4
ENG100: Freshman English (F-W1)	3	COMM 145: Public Speaking (F-OC)	3
World Language (if needed) or general elective	3	Arts & Humanities Elective (E-AH)	3
Free Elective	3		
TOTAL CREDIT HOURS	16	**TOTAL CREDIT HOURS**	14

SECOND YEAR			
Fall Semester		**Spring Semester**	
CS 331: Data Structures	3	CS351: Intro to Database Systems	3
STAT301: Prob/Applied Stats	3	CS 339: Discrete Structures	3
Literary Studies (F-AH)	3	CS325: Computer Organization and Architecture	3
Natural and Physical Science & Lab (E-NS, LS)	4	ENG307: Technical Writing	3
		Natural and Physical Science & Lab (E-NS)	4
TOTAL CREDIT HOURS	13	**TOTAL CREDIT HOURS**	16

THIRD YEAR			
Fall Semester		**Spring Semester**	
Math Elective	3	CS382: Programming Languages	3
CS396: Intermediate Software Project	3	General Elective	3
CS 360: Software Engineering	3	CS elective (CS 372 or CS 381 or CS 446)	3
CS elective (CS 443, CS 450, or CS 456)	3	Math Elective	3
ENG300: Writing in the Disciplines (F-W2)	3	Social & Behavioral Sciences (E-SB)	3
TOTAL CREDIT HOURS	**16**	**TOTAL CREDIT HOURS**	**15**

FOURTH YEAR			
Fall Semester		**Spring Semester**	
CS425: Operating Systems I	3	CS496: CS Project and Professional Practice	3
General Elective	3	CS elective (CS 445 or CS 446)	3
Connections Systems (K-SY)	3	General Elective	3
CS421: Data Structures and Algorithm Analysis	3	Connections Local to Global (K-LG)	3
CS Elective (CS 443 or CS 456)	3	Connections Social & Cultural (K-SC)	3
TOTAL CREDIT HOURS	**15**	**TOTAL CREDIT HOURS**	**15**

Total Credit Hours: 120

For more details and courses offered in the Colonnade General Education program visit the website.

World Language Requirement: Language Proficiency of novice-high before completing 60 credit hours is required (or completion of 2nd level of a language). Two credits (or equivalent) of a single world language in High School satisfies this WKU requirement.

For more Information: **School of Engineering & Applied Sciences**

Website: www.wku.edu/seas

Phone: 270-745-3251

Email: seas@wku.edu

Course Descriptions: http://www.wku.edu/undergraduatecatalog/