MEMORANDUM TO: Ogden College of Science and Engineering Curriculum Committee

Dr. Melanie Autin
Dr. Simran Banga
Dr. Royhan Gani
Dr. Becky Gilfillen
Dr. Ting-Hui Lee
Dr. Andy Mienaltowski
Dr. Hope Marchionda
Dr. Zhonghang Xia
Dr. Bangbo Yan

FROM: Dr. Stuart Burris, Chair

SUBJECT: Agenda for <u>Thursday, November 5, 2026</u>

A. OLD BUSINESS:

I. Consideration of the minutes of the October 2026 meeting.

B. NEW BUSINESS:

Type of item	Description of Item & Contact Information
Informational	**<u>The following items were sent through the expedited process</u>** Suspend: PSYS 322, 380, 424, 451, and 463 Pre-Req Update: PSYS 444
Action	**Proposal to Create a New Course** AGSY 226: Introduction to Unmanned Aircraft Systems Contact: Thomas Poole, Thomas.poole@wku.edu, 270-772-3099
Action	**Proposal to Create a New Course** AGSY 426: UAS Applications in Agriculture Contact: Thomas Poole, Thomas.poole@wku.edu, 270-772-3099
Action	**Proposal to Revise a Program** Ref. 519: Biochemistry, Bachelor of Science Contact: Kevin Williams, kevin.williams@wku.edu, x8899
Action	**Proposal to Create a New Course** METR 441: Hydroclimatology Contact: Zachary Suriano, Zachary.suriano@wku.edu, x4216
Action	**Proposal to Create a New Program** Translational Mental Health Science, Minor Contact: Andy Mienaltowski, Andrew.mienaltowski@wku.edu, 270-681-0270
Action	**Proposal to Change a Course** CIT 484: Systems Security II Contact: Yaser Mowafi, Yaser.mowafi@wku.edu, 270-745-3415

Action	**Proposal to Create a New Course** CM 180: Introduction to Construction Industry and Professional Ethics Contact: Mi Sun An, mi.an@wku.edu, x2580
Action	**Proposal to Create a New Course** CM 240: Construction Plan Reading Contact: Mi Sun An, mi.an@wku.edu, x2580
Action	**Proposal to Create a New Course** CM 270: Construction Information Technology Contact: Mi Sun An, mi.an@wku.edu, x2580
Action	**Proposal to Create a New Course** CM 351: Building Information Modeling in Construction Contact: Mi Sun An, mi.an@wku.edu, x2580
Action	**Proposal to Create a New Course** CM 380: Construction Sustainability Contact: Mi Sun An, mi.an@wku.edu, x2580
Action	**Proposal to Create a New Course** MFGE: 237: Statics for Mechatronics Contact: AKM Foysal Ahmed, akmfoysal.ahmed@wku.edu, 270-745-2086
Action	**Proposal to Make Changes to a Course** MFGE: 490A: Senior Research for Manufacturing Engineering Technology Contact: Bryan Reaka, bryan.reaka@wku.edu, 270-745-7032
Action	**Proposal to Revise a Program** Ref. 5015: Mechatronics Engineering Technology, Bachelor of Science Contact: AKM Foysal Ahmed, akmfoysal.ahmed@wku.edu, 270-745-2086
Action	**Proposal to Create a New Program** Smart Manufacturing Contact: Michael Galloway, Jeffrey.galloway@wku.edu, 270-745--2859

C. OTHER BUSINESS

I. UCC Alternative Representative Election

Minutes – OCSE Curriculum Committee **October 2026**

Members Present:
Dr. Melanie Autin, Dr. Simran Banga, Dr. Royhan Gani, Dr. Becky Gilfillen, Dr. Ting-Hui Lee, Dr. Andy Mienaltowski, Dr. Zhonghang Xia, Dr. Bangbo yan
Guests Present:
Dr. Greg Arbuckle, Dr. Bryan Reaka, Dr. Michael Galloway, Dr. Leslie North, Dr. Jenny Stewart

FROM: Dr. Stuart Burris, Chair

OLD BUSINESS:

Minutes from the September 2026 meeting were approved as posted.

NEW BUSINESS:

Action Agenda:
Ref. 578: Autin/Lee; Approved with friendly amendment
SMRT 300: Autin/Lee; Approved with friendly amendment
SMRT 325: Autin/Gani; Approved with friendly amendment
SMRT 350; Autin/Banga; Approved with friendly amendment
SMRT 490; Autin/Lee; Approved with friendly amendment
Ref. 5007; Autin/Lee; Approved with friendly amendment

Other Business:

None

Course Change Request

New Course Proposal

Date Submitted: 10/16/26 10:37 am

Viewing: AGSY 226 : Introduction to Unmanned Aircraft Systems

Last revision: 10/16/26 10:37 am

Changes proposed by: thm07943

In Workflow

1. **AGRI Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Course Inventory

Approval Path

1. 10/16/26 11:09 am Paul Woosley (paul.woosley): Approved for AGRI Approval

Proposed Action

Contact(s)

Name	E-mail	Phone
Thomas Poole	thomas.poole@wku.edu	2707723099

Term for implementation	Fall 2027		
Academic Level	Undergraduate		
Course prefix (subject area)	AGSY - Agriculture Systems	Course number	226
Department	Agriculture		
College	Science and Engineering		

Course title

Introduction to Unmanned Aircraft Systems

Abbreviated course title	INTRO TO UNMANNED AIRCRAFT SYS

Course description

An introductory course in the fundamentals of unmanned aircraft systems (UAS). This course provides foundational knowledge and practical skills for the safe, legal, and effective operation of small unmanned aircraft through classroom instruction, simulation, and hands-on flight activities. Field experiences at the University Farm may be required. Successful completion of the course prepares students for the FAA Part 107 Remote Pilot Certificate examination.

Credit hours 3

Repeatable

Yes

Number of repeats 1

For maximum credits 3

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Lecture/Lab

CIP Code 010205 - Agricultural Mechanics and Equipment/Machine Technology/Technician.

Does this course have prerequisites

No

Corequisites

Equivalent Courses

Restrictions:

College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

None

Reason for developing the

proposed course

UAS technology is rapidly expanding across agriculture, geospatial technology, construction, environmental science, public safety, and other industries. This introductory course will provide students across disciplines with foundational knowledge and hands-on experience in UAS operations, including FAA regulations, safety, airspace, mission planning, and flight operations. The course will serve as the foundation for an interdisciplinary UAS certificate while preparing students for the FAA Part 107 Remote Pilot Certificate and future careers involving UAS technology.

Is this related to other courses at WKU?

No

What departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

The creation of this course will cause no conflicts with other departments as there are no current courses of this nature offered at WKU. However, the department chair of the Earth, Environmental, and Atmospheric Sciences department was consulted on 9/4/26 and the department chair of the Business Data Analytics department was consulted 9/17/26 in anticipation of possible future partnerships surrounding this course and similar courses.

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

2

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

20

How many students per academic year are expected to enroll?

40

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

Based on the number of students in the Department of Agriculture and Food Science it is anticipated that 12-15 students would enroll. An additional 5-8 students is expected from other departments. Additionally, lab materials/space may limit capacity to 20.

Is this course part of a program that leads to teacher certificate?	No

Are you seeking Colonnade approval for this course?	No

Student Learning Outcomes

#	Student Learning Outcomes
1	1. Explain fundamental principles of aviation, UAS technology, and small UAS flight operations. 2. Apply FAA regulations, airspace requirements, and operational limitations to small UAS missions. 3. Conduct preflight planning, aircraft inspections, launch and landing operations, and post-flight procedures. 4. Demonstrate fundamental UAS flight skills through simulation and hands-on flight activities. 5. Evaluate weather, environmental conditions, and operational hazards to support safe UAS flight. 6. Develop and execute basic UAS mission plans that incorporate operational objectives, safety considerations, airspace, weather, equipment, and personnel. 7. Apply appropriate emergency procedures and risk-management practices to UAS operations. 8. Explain ethical, legal, and privacy considerations associated with UAS operations and remotely collected data.

Content outline

#	Topic
1	Week 1. Introduction to UAS Week 2. Aviation & Flight Fundamentals Week 3. UAS Systems & Operations Week 4. FAA Regulations & Remote Pilot Responsibilities Week 5. Airspace & Aviation Charts Week 6. Weather & Environmental Conditions Week 7. Human Factors, Safety & Risk Management Week 8. Flight Skills & Simulation Week 9. Hands-On Flight Operations I Week 10. Emergency Procedures & Abnormal Operations Week 11. Mission Planning Week 12. Hands-On Flight Operations II Week 13. Ethics, Privacy & Responsible UAS Operations Week 14. Applied UAS Missions

#	Topic
	Week 15. Course Review Week 16. Final Exam

Student expectations and requirements

1. Attend and actively participate in scheduled class, laboratory, simulation, and field activities.
2. Complete assigned readings, coursework, quizzes, and examinations.
3. Demonstrate knowledge of UAS operations, FAA regulations, airspace, weather, safety, and risk management.
4. Successfully complete required simulator and hands-on flight activities.
5. Demonstrate safe and responsible operation of UAS during all flight activities.
6. Develop and execute basic UAS mission plans.
7. Participate in field activities at the University Farm.
8. Follow all FAA, university, instructor, and site-specific safety requirements.
9. Demonstrate professional and ethical conduct, including responsible use of UAS imagery and collected data.
10. Meet any requirements established for participation in flight activities, including completion of required safety training or documentation.

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Did you complete the Library Resources Form for New Courses?

Yes

Tentative texts, course materials, and special equipment

Provided by the instructor

Special equipment, materials, or library resources needed

None

Additional information

Supporting documentation

Reviewer Comments

Key: 10289

Course Change Request

New Course Proposal

Date Submitted: 10/16/26 10:38 am

Viewing: AGSY 426 : UAS Applications in Agriculture

Last revision: 10/16/26 10:38 am

Changes proposed by: thm07943

Proposed Action

In Workflow

1. **AGRI Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Course Inventory

Approval Path

1. 10/16/26 11:10 am Paul Woosley (paul.woosley): Approved for AGRI Approval

Contact(s)

Name	E-mail	Phone
Thomas Poole	thomas.poole@wku.edu	2707723099

Term for implementation	Fall 2027		
Academic Level	Undergraduate		
Course prefix (subject area)	AGSY - Agriculture Systems	Course number	426
Department	Agriculture		
College	Science and Engineering		

Course title

UAS Applications in Agriculture

Abbreviated course title	UAS APPLICATIONS IN AG

Course description

An applied course examining the use of unmanned aircraft systems (UAS) in modern agriculture. Students will explore UAS platforms, sensors, imaging technologies, and data collection methods used to support agricultural production and resource management.

Credit hours 3

Repeatable

Yes

Number of repeats 1

For maximum credits 3

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Lecture/Lab

CIP Code 010205 - Agricultural Mechanics and Equipment/Machine Technology/Technician.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		AGSY 226	D	UG		No

Corequisites

Equivalent Courses

Restrictions:

College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

None

Reason for developing the proposed course

UAS technology is rapidly expanding across agriculture, geospatial technology, construction, environmental science, public safety, and other industries. This applied course will provide students with foundational knowledge and hands-on experience in UAS operations related to agriculture.

Is this related to other courses at WKU?

No

What departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

The creation of this course will cause no conflicts with other departments as there are no current courses of this nature offered at WKU. However, the department chair of the Earth, Environmental, and Atmospheric Sciences department was consulted on 9/4/26 and the department chair of the Business Data Analytics department was consulted 9/17/26 in anticipation of possible future partnerships surrounding this course and similar courses.

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

20

How many students per academic year are expected to enroll?

40

How were these projections calculated? Explain any supporting evidence/data you

have for arriving at these projections:

Based on the number of students in the Department of Agriculture and Food Science it is anticipated that 12-15 students would enroll. An additional 5-8 students is expected from other departments. Additionally, lab materials/space may limit capacity to 20.

Is this course part of a program that leads to teacher certificate? No

Are you seeking Colonnade approval for this course? No

Student Learning Outcomes

#	Student Learning Outcomes
1	1. Identify UAS platforms, sensors, and imaging technologies used in agriculture. 2. Explain basic remote sensing principles and their agricultural applications. 3. Plan and conduct UAS missions for agricultural data collection. 4. Collect and interpret UAS imagery and remotely sensed agricultural data. 5. Apply UAS technology to agricultural applications such as crop scouting, plant health, irrigation, livestock, and precision agriculture. 6. Evaluate the benefits, limitations, and practical considerations of using UAS in agricultural operations.

Content outline

#	Topic
1	Week 1. Introduction to UAS in Agriculture Week 2. Precision Agriculture & Remote Sensing Week 3. UAS Platforms for Agricultural Applications Week 4. Agricultural Sensors: RGB, Multispectral & Thermal Week 5. Flight Planning & Agricultural Data Collection Week 6. Image Acquisition & Data Quality Week 7. Crop Scouting & Plant Health Week 8. Multispectral Imagery & Vegetation Indices Week 9. Thermal Imaging & Irrigation Management Week 10. Soil, Nutrient & Field Variability Applications Week 11. Livestock & Animal Agriculture Applications Week 12. UAS Applications in Forestry, Natural Resources & Specialty Crops Week 13. Image Processing & Agricultural Data Analysis Week 14. Applied Agricultural UAS Missions Week 15. Applied Agricultural UAS Missions Week 16. Final Exam

Student expectations and requirements

1. Attend and actively participate in scheduled class, laboratory, simulation, and field activities.
2. Complete assigned readings, coursework, quizzes, and examinations.
3. Demonstrate knowledge of UAS operations, FAA regulations, airspace, weather, safety, and risk management.
4. Successfully complete required simulator and hands-on flight activities.
5. Demonstrate safe and responsible operation of UAS during all flight activities.
6. Develop and execute basic UAS mission plans.
7. Participate in field activities at the University Farm.
8. Follow all FAA, university, instructor, and site-specific safety requirements.
9. Demonstrate professional and ethical conduct, including responsible use of UAS imagery and collected data.
10. Meet any requirements established for participation in flight activities, including completion of required safety training or documentation.

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Did you complete the Library Resources Form for New Courses?

Yes

Tentative texts, course materials, and special equipment

Provided by instructor

Special equipment, materials, or library resources needed

None

Additional information

Supporting documentation

Reviewer Comments

Key: 10290

Program Change Request

Date Submitted: 10/23/26 2:59 pm

Viewing: 519 : Biochemistry, Bachelor of Science

Last approved: 06/26/24 2:16 pm

Last edit: 10/26/26 8:14 am

Changes proposed by: kvn75175

Catalog Pages
Using this Program
Biochemistry, Bachelor of Science (519)

Proposed Action

In Workflow

1. 99SC Approval
2. CHEM Approval
3. SC Dean
4. SC Curriculum Committee
5. Undergraduate Curriculum Committee
6. University Senate
7. Provost
8. Program Inventory

Approval Path

1. 10/26/26 8:18 am Stuart Burris (stuart.burris): Approved for 99SC Approval
2. 10/26/26 9:51 am Matthew Nee (matthew.nee): Approved for CHEM Approval

History

1. May 25, 2021 by Rheanna Plemons (rheanna.plemons)
2. Aug 6, 2021 by Jessica Dorris (jessica.dorris)
3. Aug 6, 2021 by Jessica Dorris (jessica.dorris)
4. Sep 27, 2021 by Jennifer Hammonds (jennifer.hammonds)
5. Apr 12, 2023 by Jennifer Hammonds

(jennifer.hammonds)
6. Jun 29, 2023 by Ryan Wilson (ryan.wilson)
7. Jan 23, 2024 by Jessica Dorris (jessica.dorris)
8. May 23, 2024 by Ryan Wilson (ryan.wilson)
9. Jun 26, 2024 by Ryan Wilson (ryan.wilson)

Active

Contact Person

Name	Email	Phone
Kevin Williams	kevin.williams@wku.edu	270-745-8899

Term of Implementation	2027-2028
Program Reference Number	519
Review Type	Full Review
Academic Level	Undergraduate
Program Type	Major
Degree Types	Bachelor of Science
Department	Chemistry and Biochemistry ~~OCSE Interdisciplinary Programs~~
College	Science and Engineering
Program Name (eg. Biology)	Biochemistry, Bachelor of Science

Will this program have concentrations?

No

CIP Code	26.0202 - Biochemistry.
Will this program lead to teacher certification?	No

Does the proposed program contain 25% or more new content not previously taught in another course at WKU? If yes, contact the Office of the Provost for additional SACSCOC proposal requirements

No

Catalog Content

Program Overview (Catalog field: Overview tab)

Advisor:
Dr. Kevin Williams, Department of Chemistry and Biochemistry
Kelly Thompson Hall, Office 4056
Phone: 270-745-8899
Faculty:
K. Williams, D. Wolfgang

~~**Faculty:**~~
~~**Department of Chemistry:** M. Kim, K. Williams, D. Wolfgang~~
~~**Department of Biology:** R. King, A. Srivastava~~
Biochemistry is the study of the chemical basis of living organisms. The subject includes the investigation of the various classes of biomolecules (proteins, nucleic acids, lipids, and carbohydrates) and their metabolic interactions.
Training in biochemistry offers many exciting opportunities in teaching, research, and public service. It provides excellent preparation for students intending to enter professional programs such as Dentistry and Medicine as well as graduate study in Biochemistry, Chemistry, or Biology. ~~The Biochemistry program is the only stand-alone Bachelor's Degree in Biochemistry at a public institution in the Commonwealth. It is administered jointly through the Departments of Biology and Chemistry. Students may enroll for biochemistry courses through either the Department of Biology or the Department of Chemistry, depending upon their major emphasis.~~
Pre-health professional students
The B.S. in Biochemistry is an excellent choice for students interested in careers in medicine, pharmacy, dentistry, and other health-professional careers. Most of the required and recommended courses for these professional schools are either required or elective courses within the major in Biochemistry. Students should consult the requirements for admission to their desired pre-professional program and consult with their advisor to determine when particular courses should be completed.
~~Biochemistry I (BIOL 446/CHEM 446) is strongly recommended for pre-medicine and pre-dentistry students as well as for chemistry and biology majors.~~

Curriculum Requirements (Catalog field: Program Requirements)

Program Requirements (57 ~~60~~ hours)

Approved Shared Content from /shared/undergraduate-major-requirements/
Last Approved: May 21, 2026 2:57pm

A baccalaureate degree requires a minimum of 120 unduplicated semester hours. More information can be found at www.wku.edu/registrar/degree_certification.php.
Students who began WKU in the Fall 2014 and thereafter should review the Colonnade requirements located at: https://www.wku.edu/colonnade/colonnaderequirements.php.

The major in biochemistry requires a minimum of 57 ~~60~~ semester hours and leads to a Bachelor of Science degree. This sequence of required chemistry and biology courses along with elective courses from biology, chemistry, agriculture, and physics offers the student a unique opportunity for interdisciplinary training.

Required Courses		
CHEM 120	College Chemistry I	3
CHEM 121	College Chemistry I Laboratory	2
CHEM 222	College Chemistry II	3
CHEM 223	College Chemistry II Laboratory	2
CHEM 330	Quantitative Analysis	5
CHEM 340	Organic Chemistry I	3
CHEM 341	Organic Chemistry Laboratory I	2
CHEM 342	Organic Chemistry II	3
CHEM 343	Organic Chemistry II Laboratory	2
BIOL 120	Biological Concepts: Cells Metabolism and Genetics	3
BIOL 121	Biological Concepts: Cells, Metabolism, and Genetics Lab	1
BIOL 122	Biological Concepts: Evolution, Diversity, and Ecology	3
BIOL 123	Biological Concepts: Evolution, Diversity, and Ecology Lab	1
BIOL 319	Introduction to Molecular and Cell Biology	3
BIOL 322	Introduction to Molecular and Cell Biology Laboratory	1
CHEM 446	Biochemistry I	3
CHEM 447	Biochemistry Laboratory	2
CHEM 467	Biochemistry II	3
Electives		
Select at least 12 hours of the following courses:		12
~~BIOL 212~~	~~Course BIOL 212 Not Found~~	
BIOL 222	Plant Biology and Diversity	
BIOL 223	Plant Biology and Diversity Lab	
BIOL 224	Animal Biology and Diversity	
BIOL 225	Animal Biology and Diversity Lab	
BIOL 226	Microbial Biology and Diversity	
BIOL 227	Microbial Biology and Diversity Lab	
BIOL 312	Bioinformatics	
BIOL 316	Evolution: Theory and Process	
BIOL 327	Genetics	
BIOL 337	Genetics Laboratory	
BIOL 328	Immunology	

BIOL 330	Animal Physiology	
BIOL 331	Animal Physiology Laboratory	
BIOL 335	Neurobiology	
BIOL 350	Introduction to Recombinant Genetics	
BIOL 382	Introductory Biostatistics	
BIOL 399	Research in the Biological Sciences	
BIOL 403	Molecular Basis of Cancer	
BIOL 404	Techniques and Theory of Electron Microscopy	
BIOL 407	Virology	
BIOL 411	Cell Biology	
~~BIOL/CHEM 446~~	~~Biochemistry I~~	~~3~~
~~BIOL/CHEM 447~~	~~Biochemistry Laboratory~~	~~2~~
~~BIOL/CHEM 467~~	~~Biochemistry II~~	~~3~~
BIOL 412	Cell Biology Laboratory	
BIOL 420	Introduction to Toxicology	
BIOL 440	Developmental Genetics	
BIOL 450	Recombinant Gene Technology	
BIOL 464	Endocrinology	
BIOL 475	Selected Topics in Biology	
BIOL 495	Molecular Genetics	
BIOL 496	Plant Biotechnology	
CHEM 320	Inorganic Chemistry I	
CHEM 399	Research Problems in Chemistry	
CHEM 420	Inorganic Chemistry II	
CHEM 430	Forensic Chemistry	
CHEM 435	Instrumental Analysis	
CHEM 450	Physical Chemistry I	
CHEM 451	Physical Chemistry I Laboratory	
CHEM 452	Physical Chemistry II	
CHEM 453	Physical Chemistry II Laboratory	
CHEM 462	Bioinorganic Chemistry	
CHEM 475	Selected Topics in Chemistry	
~~AGRO 320~~	~~Course AGRO 320 Not Found~~	

~~AGRO 350~~	~~Course AGRO 350 Not Found~~
~~AGRO 351~~	~~Course AGRO 351 Not Found~~
~~AGRO 352~~	~~Course AGRO 352 Not Found~~
~~AGRO 409~~	~~Course AGRO 409 Not Found~~
~~AGRO 410~~	~~Course AGRO 410 Not Found~~
~~AGRO 452~~	~~Course AGRO 452 Not Found~~
ANSC 345	Principles of Animal Nutrition
PLSS 320	Environmental Plant Physiology
PLSS 350	Introduction to Soils
PLSS 351	Soils Laboratory
PLSS 352	Nutrient Management
PLSS 409	Weed Ecology and Management
PLSS 410	Weed Ecology and Management Laboratory
PLSS 452	Soil Ecosystems
ANSC 437	Reproductive Physiology
ANSC 438	Reproductive Physiology Laboratory
ANSC 448	Applied Animal Nutrition
AGRI 399	Research Problems in Agriculture
PHYS 335	General Biophysics
PHYS 431	Radiation Biophysics
Total Hours	57

Additional Courses (12-14 Hours)

MATH 136	Calculus I	4
Select one of the following groups:		
PHYS 231	Introduction to Physics and Biophysics I	8
& PHYS 232	and Laboratory for Physics and Biophysics I	
& PHYS 233	and Laboratory for Physics and Biophysics II	
& PHYS 332	and Introduction to Physics and Biophysics II	
PHYS 255	University Physics I	10
& PHYS 256	and University Physics I Lab	
& PHYS 265	and University Physics II	
& PHYS 266	and University Physics II Laboratory	

4-Year Plan

Finish in Four Plan

First Year

Fall	Hours	Spring	Hours
BIOL 120 & BIOL 121	4	BIOL 122 & BIOL 123	4
CHEM 120 & CHEM 121	5	CHEM 222 & CHEM 223	5
ENG 100	3	MATH 136	4
COMM 145	3	HIST 101 or HIST 102	3
	15		16

Second Year

Fall	Hours	Spring	Hours
CHEM 330	5	BIOL 319 & BIOL 322	4
PHYS 231 & PHYS 232	4	CHEM 340 & CHEM 341	5
ENG 200	3	PHYS 332 & PHYS 233	4
Colonnade - Social & Behavioral Science	3	Colonnade - Arts & Humanitites	3
	15		16

Third Year

Fall	Hours	Spring	Hours
CHEM 342 & CHEM 343	5	~~BIOL 446~~	~~3~~
Biochemistry Elective	3	~~BIOL 447~~	~~2~~
Colonnade - Writing in the Disciplines	3	~~BIOL 411~~	~~3~~
World Language or Elective	3	Biochemistry Elective	6
		CHEM 446	3
		CHEM 447	2
		Colonnade - Social & Cultural	3
	14		14

Fourth Year

Fall	Hours	Spring	Hours
BIOL 399 or CHEM 399	3	~~BIOL 467~~	~~3~~
Biochemistry Elective	3	CHEM 467	3
Biochemistry Elective	3	Elective	3
Colonnade - Local to Global	3	Elective	3
Colonnade - Systems	3	Elective	3
		Elective	3
	15		15

Total Hours 120

Will this program be managed or owned by more than one department?

No

Does this program include courses from outside your department?

Yes

Outside Courses
Details

Who approved including these courses?	When were they approved?
Previously approved by departments	These courses have been in place for over 20 years

Learning Outcomes

	List all student learning outcomes of the program.
SLO 1	Communicate effectively in written form.
SLO 2	Interpret and explain data about chemical systems.
SLO 3	Describe and discuss structure-property-function relationships for a variety of molecules.

Assessment Template: https://www.wku.edu/academicaffairs/ee/assurance_learning_resources.php

Current Assessment Plan: ap-assessment-plan_biochemistry_519.docx

Current Curriculum (or Skills) Map: curriculum_map_519_updated.xlsx

Delivery Mode

Is 25% or more of this program offered at a location other than main campus?

No

Enter Location(s) and Percentage of Program Offered at Location(s)

Is 50% or more of this program offered by distance education (online asynchronous, online synchronous, connected classrooms, etc.)?

No

Do you plan to offer 100% of this program online?

No

If no, enter the percentage of the program that will be taught online.

0

Do you plan to offer 100% of this program face-to-face?

Yes

Do you plan to offer at least 25% of this program as a direct assessment competency-based educational program?

No

Are there any in-person on-campus requirements?

Does this program have experiential learning (practicum/internship/clinical)?

Does this program lead to professional licensure (excluding teaching certification)?

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Did you complete the Library Resource Form?

No

Rationale

Rationale for the program proposal?

In order to facilitate completion of the major, the total number of hours is being reduced from 60 to 57 hours. BIOL 411, Cell Biology, is being moved from a required course to an elective. Some elective courses have changed prefixes, and these have been updated.

Additional Attachments

Additional information or attachments

Reviewer Comments

Key: 256

Course Change Request

New Course Proposal

Date Submitted: 09/17/26 7:58 am

Viewing: METR 441 : Hydroclimatology

Last revision: 10/16/26 10:45 am

Changes proposed by: zch73137

Proposed Action

In Workflow

1. GEO Approval
2. SC Dean
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Course Inventory

Approval Path

1. 09/16/26 10:55 pm Leslie North (leslie.north): Rollback to Initiator
2. 10/16/26 10:45 am Leslie North (leslie.north): Approved for GEO Approval

Contact(s)

Name	E-mail	Phone
Zachary Suriano	zachary.suriano@wku.edu	2707454216

Term for implementation	Fall 2027		
Academic Level	Undergraduate		
Course prefix (subject area)	METR - Meteorology	Course number	441
Department	Geography & Geology		
College	Science and Engineering		

Course title
Hydroclimatology

Abbreviated course title: HYDROCLIMATOLOGY

Course description

Hydroclimatology utilizes climatic data and models to understand the forcing mechanisms, impacts, variations, and changes of the global hydrologic cycle, including a wide range of environmental issues such as floods and droughts. This course is taught with an experiential- and/or service-learning framework which will teach both theoretical content through group discussion of contemporary research, and technical and communication skills through applied research and stakeholder engagement.

Credit hours: 3

Repeatable

Yes

Number of repeats: 2

For maximum credits: 3

Default grade type: Standard Letter

Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Applied Learning

Seminar

CIP Code: 400401 - Atmospheric Sciences and Meteorology, General.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
	(	METR 324	C	UG		No
Or		METR 322	C	UG		No
Or		GEOG 280	C	UG		No
Or		GEOL 310	C	UG	)	No

Corequisites

Equivalent Courses

Restrictions:

College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for developing the proposed course

Course was piloted for two semesters as METR 475 in Fall 2023 and Fall 2025. Student demand was evident both semesters, indicating sufficient capacity to support establishing a stand alone course. Course serves as a opportunity for students to build skills in applied research, complementing and enhancing existing curriculum within the discipline.

Is this related to other courses at WKU?

No

What departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

n/a

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

1

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

10-14

How many students per academic year are expected to enroll?

10-14

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

Calculated based on actual enrollments in the Fall 2023 and Fall 2025 pilot offerings of the course. Increased projections beyond these estimates are likely based on growth rates in the applicable EEAS programs.

Is this course part of a program that leads to teacher certificate? No

Are you seeking Colonnade approval for this course? No

Student Learning Outcomes

#	Student Learning Outcomes
1	Demonstrate a conceptual understanding of hydroclimatology that includes relevant theory, methodological design, and datasets.
2	Critique relevant scientific literature concerning hydroclimatology.
3	Analyze visual representations of hydroclimatic variations and trends.
4	Apply this knowledge to a research project, building skills in research design, data analysis, and effective communication.

Content outline

#	Topic
1	Overview of hydrologic cycle
2	Global precipitation climatology
3	Precipitation processes and extremes
4	Snowfall climatology and processes
5	Cryospheric variability
6	Snowmelt processes
7	Drought climatology and processes

#	Topic
8	Drought reconstructions
9	Future hydroclimatic conditions
10	Research design (embedded throughout the course)

Student expectations and requirements

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Did you complete the Library Resources Form for New Courses?

Yes

Tentative texts, course materials, and special equipment

Materials include collections of peer-reviewed literature. E.g., Barlow et al. (2011), Chalise et al. (2021), Degaetano and Tran (2022), Dettinger (2013), Dixon et al. (2026), Flanagan et al. (2020), Hartnett (2020) Kluver and Leathers (2015), Leathers et al. (1998), Liu and Niyogi (2019), Maddox et al. (1979), Maina and Kumar (2025), Nizoil et al. (1995), Pederson et al. (2021), Ramseyer et al. (2021), Suriano et al. (2026), Tekoe and Suriano (2025), Vergopolan et al. (2022)

Special equipment, materials, or library resources needed

n/a

Additional information

Supporting documentation

Reviewer Comments

Leslie North (leslie.north) (09/16/26 10:55 pm): Rollback: Correction

Key: 10256

Program Change Request

New Program Proposal

Date Submitted: 10/08/26 11:52 am

Viewing: : Translational Mental Health Science, Minor

Last edit: 10/08/26 11:52 am

Changes proposed by: and30774

Proposed Action

In Workflow

1. **PSYS Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Board of Regents
8. Program Inventory

Approval Path

1. 10/12/26 10:44 am Jennifer Stewart (jennifer.stewart): Approved for PSYS Approval

Contact Person

Name	Email	Phone
Andrew Mienaltowski	andrew.mienaltowski@wku.edu	270-681-0270
Jennifer Stewart	jennifer.stewart@wku.edu	270-745-2312

Term of Implementation	2027-2028
Academic Level	Undergraduate
Program Type	Minor
Department	Psychological Sciences
College	Science and Engineering
Program Name (eg. Biology)	Translational Mental Health Science, Minor
CIP Code	42.2801 - Clinical Psychology.

Will this program lead to teacher certification?	No

Does the proposed program contain 25% or more new content not previously taught in another course at WKU? If yes, contact the Office of the Provost for additional SACSCOC proposal requirements

No

Catalog Content

Curriculum Requirements (Catalog field: Program Requirements)

The Translational Mental Health Science minor (21 hours) provides students with a comprehensive, scientifically grounded understanding of mental health and shows how innovative discoveries lead to practical treatment strategies. Students examine biopsychosocial influences on mental health while gaining exposure to contemporary science on suicide, substance use, trauma, and psychopharmacology. Elective options allow students to explore pragmatic, translational approaches to mental health.

Here are the program requirements:

Core Foundation		
PSYS 100	Introduction to Psychology	3
PSYS 220	Introduction to Lifespan Developmental Psychology	3
PSYS 440	Abnormal Psychology	3
Translational Mental Health Science Options		**12**
Clinical Psychological Science Options (at least 3 hours)		
PSYS 352	Health Psychology: The Mind-Body Connection	
PSYS 442	Psychology of Suicide and Self-Injury	
PSYS 444	Psychology of Substance Use Disorders	
PSYS 450	Psychology of Personality	
PSYS 465	Psychopharmacology	
PSYS 499	Senior Seminar in Psychology	
Socio-Developmental Science Options (at least 3 hours)		
PSYS 423	Psychology of Adult Life and Aging	
PSYS 425	Developmental Psychopathology	
PSYS 453	Psychology of Women	
Translational Approach Options (at least 3 hours)		
SWRK 310	Introduction to Substance Use Assessment and Treatment	
SWRK 311	Understanding Intergenerational Trauma	
SWRK 313	Co-occurring Disorders	

SWRK 320	Introduction of Substance Use Counseling Skills
SWRK 438	Understanding Trauma
CNS 432	Helping Skills
MUS 330	Introduction to Music as Therapy
Total Hours	21

Will this program be managed or owned by more than one department?

No

Does this program include courses from outside your department?

Yes

Outside Courses
Details

Who approved including these courses?	When were they approved?
CNS 432 approved by Dr. Jill Duba Sauerheber (Counseling and Student Affairs)	9/6/2026
SWRK courses approved by Dr. Grace Lartey (School of Health and Social Services)	9/9/2026
MUS 330 approved by Dr. Zachary Lopes (Music)	9/21/2026

Relation to Mission and Strategic Plan

Explain how the proposed program relates to the institutional mission and academic strategic plan.

The Translational Mental Health Science minor directly advances WKU's mission of preparing students from all backgrounds to become productive, engaged, and socially responsible citizen-leaders by equipping undergraduates across multiple majors with scientifically grounded knowledge of mental health. This competency has clear relevance to personal life, civic engagement, and communities facing documented mental health needs. This emphasis on evidence-based coursework also reflects the University's Statement of Purpose, which calls for rigorous academic programming in the health sciences and for research and service that support economic development, quality of life, and educational improvement. The minor also supports several specific priorities in the 2026–2031 strategic plan. The 21-hour minor supports the goal to maintain applied and flexible academic programs that support career readiness in domains with evolving workforce demands and regional need. The minor provides structured preparation for graduate study and workforce entry, especially by including electives on substance use counseling, suicide prevention, child psychopathology, and trauma.

Explain how the proposed program addresses the state's postsecondary education strategic agenda

By giving students across multiple majors a structured, evidence-based course of study in translational mental health science, the proposed minor supports Kentucky's 2022–30 Statewide Postsecondary Education Strategic Agenda as a new program that is an area where more talent is needed, and where that talent is grown via high quality, evidence-based study.

Program Quality and Demand

Provide justification and evidence to support the need and demand for this proposed program. Include any data on student demand; career opportunities at the regional, state, and national level; and any changes or trends in the discipline that necessitate a new program.

Learning Outcomes

	List all student learning outcomes of the program.
SLO 1	Explain major psychological theories and empirical findings related to mental health, including the classification, etiology, and treatment of psychological disorders
SLO 2	Analyze mental health and behavior using scientifically grounded, biopsychosocial frameworks, incorporating empirical perspectives on development, identity, and environmental influences
SLO 3	Evaluate empirical evidence on how mental health processes vary across the lifespan and among diverse populations, including developmental and sociocultural differences
SLO 4	Critically assess scientific and clinical approaches to mental health, including evidence-based prevention, assessment, and treatment strategies for issues such as substance use, trauma, and suicide

Current Assessment Plan

Current Curriculum (or Skills) Map

Change in Discipline (If the program is being proposed to meet changes in the academic discipline, please outline those changes and explain why they necessitate development of a new program.)

Specify any distinctive qualities of the program.

A distinctive quality of this minor is its clear grounding in translational psychological science, built on empirically based practice consistent with the scientist-practitioner model of training. Importantly, the curriculum is scaffolded. Students first build foundational science through Introduction to Psychology, Introduction to Lifespan Developmental Psychology, and Abnormal Psychology, before advancing into higher-level, evidence-based coursework on specific mental health conditions, special populations, and applied treatment approaches. Students learn how psychological disorders are classified, studied, and treated based on current science while developing a foundation in clinical psychological and socio-developmental science. Lightcast employee skills data (Lightcast, Q3 2026) emphasize a growing need for professionals in this domain to have background in health psychology, treatment planning, crisis intervention, and psychiatry. Foundational knowledge in these domains is provided in courses offered by the Department of Psychological Sciences, like in PSYS 352 Health Psychology, PSYS 442 Psychology of Suicide and Self-Injury, PSYS 444 Psychology of Substance Use Disorders, and PSYS 465 Psychopharmacology.

Does the proposed program differ from existing programs in terms of curriculum, focus, objectives, etc.?

Yes

Please explain

The Translational Mental Health Science Minor focuses on evidence-based clinical psychology outcomes and provides undergraduates interested in this domain with empirical evidence used in clinical decision-making. It focuses on the "why" and "how" of human behavior, using empirical data, biological/social theories, and diagnostic classification to support the understanding needed by undergraduates to reason scientifically through our rapidly developing knowledge of mental illness through translational science. The outcomes listed for this program are different from other minors focused on clinical human service outcomes that emphasize the structural and behavioral map for navigating the professional world of social services including the "where" (organizations/agencies) and the "who" (the role of the helper and the impact of personal values).

Does the proposed program serve a different student population (i.e., students in a different geographic area, non-traditional students) from existing programs?

No

Is access to existing programs limited?

No

Describe how the proposed program will articulate with related programs in the state. It should describe the extent to which students transfer has been explored and coordinated with other institutions.

Students who complete Introduction to Psychology, Introduction to Lifespan Developmental Psychology, and Abnormal psychology while at a community college or state 4-year institution would be able to apply those hours toward completing the minor. To the extent that the course work in the Clinical Psychological Science or Socio-Developmental Science restricted elective courses are taught elsewhere in a comparable fashion, those may also count. That said, WKU offers courses in these categories and in the translational options category that add distinct value to a student’s experience while studying at WKU. Additionally, students completing the minor who may benefit by majoring in Psychological Science will be able to count all but three hours of the minor toward the program.

Describe student demand data for this program.

At the state level, student demand level for programs in the CIP 42.2801 fall at the 77th percentile with year over year Google Search Volume growing at the 95th percentile (Gray Decision Intelligence, 2026). In WKU’s service region, the student demand level is higher, at the 80th percentile. Note, however, that national completions data show that this field is overwhelmingly oriented toward graduate education. Of 6,182 completions nationally in 2025 in CIP 42.2801, 93% were

awarded at the master's or doctoral level, with only 5.5% at the bachelor's level (Lightcast, Q3 2026). Correspondingly, 82.6% of the national workforce in Clinical and Counseling Psychologist roles holds a doctoral or professional degree (Lightcast, Q3 2026). Although licensed clinical and counseling psychology practice is a graduate-credentialed profession, the proposed minor offers the kind of foundational, evidence-based coursework that prepares undergraduates to compete for admission to and succeed in graduate programs in this space. It also offers valuable instruction in evidence-based thinking to support health-adjacent careers. The minor gives students early exposure to psychopathology, biopsychosocial frameworks, and applied practice areas before they enter graduate study.

Describe workforce needs and career outcomes for graduates of this program.

Occupational projections reinforce the strength of a graduate pathway toward mental health professions. Employment in Clinical and Counseling Psychologist occupations is projected to grow 20% nationally from 2024 to 2032 (Lightcast, Q3 2026). Median compensation in the occupation is $99,511 regionally and $100,589 nationally, with wages rising sharply by credential level and highest levels generally linked to graduate study and licensure (Gray Decision Intelligence, 2026). Beyond the licensed psychologist pathway itself, students who complete related coursework in this CIP code also enter a broad range of adjacent roles, including management, applied behavioral health, and social-service positions. These roles value grounding in psychological science without requiring licensure. Weighted average Bureau of Labor Statistics data for the WKU service region show that the median salary for those entering the field after earning a bachelor’s degree at $56,924 (Gray Decision Intelligence, 2026). In the service region, at the master’s level, the median salary grows to $73,948, and at the doctoral level the salary grows further to $88,907. At the state level, salaries for each of these levels is about $5,000 higher (Gray Decision Intelligence, 2026). This suggests that the minor offers value by functioning as competitive preparation for students pursuing graduate study in clinical, counseling, or behavioral health fields and by providing transferable, in-demand knowledge for students entering the workforce directly

Will this program replace or enhance any existing program(s) or concentration(s) within an existing program?

No

Program Demand Data and Support Documents	WKU_42_2801_state.pdf Occupation_Overview_Clinical_and_Counseling_Psychologists.pdf Program_Overview_42_2801.pdf WKU_42_2801_region.pdf

Library Resources

Library Resources	Library Resources Translational Mental Health Science Minor.pdf

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Rationale

Rationale for the program proposal?

The Translational Mental Health Science minor is proposed in response to converging evidence of student interest, occupational growth, and alignment with institutional and state priorities. Search and enrollment-interest data show strong and growing student interest in mental health science coursework, both regionally and statewide, while national completions data confirm that this field is overwhelmingly oriented toward graduate education, with occupational growth projections reinforcing the strength of this pathway. The proposed minor offers a scaffolded course of study, building from foundational psychological science into evidence-based coursework on specific mental health conditions, special populations, and translational practice areas, consistent with the scientist-practitioner model of training. This structure is designed to prepare students across majors for graduate study or entry into mental health-related careers. The program also aligns with institutional and state priorities. It advances WKU's mission of preparing socially responsible citizen-leaders and reflects specific goals of the 2026–2031 strategic plan, including its call for a flexible and applied academic portfolio and for career-connected learning aligned with workforce demand. At the state level, the minor supports Kentucky's Statewide Postsecondary Education Strategic Agenda, particularly its Talent priority, which names healthcare and STEM fields among the state's critical workforce shortage areas.

I agree that our program's primary purpose is educational and scholarly and abides by institutional, state, and federal policies.

Yes

Additional Attachments

Additional information or attachments

Reviewer Comments

Key: 434

Course Change Request

Date Submitted: 10/23/26 10:08 am

Viewing: CIT 484 : Systems Security II

Last approved: 02/13/24 3:16 am

Last revision: 10/23/26 10:08 am

Changes proposed by: ysr38557

Catalog Pages referencing this course

Computer Info Technology (CIT)

School of Engineering and Applied Sciences

Proposed Action

In Workflow

1. **EAS Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Course Inventory

Approval Path

1. 09/21/26 10:10 am Bryan Reaka (bryan.reaka): Rollback to Initiator
2. 09/22/26 6:40 pm Bryan Reaka (bryan.reaka): Approved for EAS Approval
3. 09/28/26 10:19 am Stuart Burris (stuart.burris): Rollback to Initiator
4. 10/23/26 10:03 am Bryan Reaka (bryan.reaka): Rollback to Initiator
5. 10/23/26 10:10 am Bryan Reaka (bryan.reaka): Approved for EAS Approval

History

1. Feb 13, 2024 by stc51902

Active

Contact(s)

Name	E-mail	Phone
Yaser Mowafi ~~Stacy Wilson~~	yaser.mowafi@wku.edu ~~stacy.wilson@wku.edu~~	2707453415 ~~2707456394~~

Review Type	Full Review ~~Expedited~~
Term for implementation	Spring 2027
Academic Level	Undergraduate
Course prefix (subject area)	CIT - Computer Info Technology
Course number	484
Department	Engineering & Applied Sciences, School of
College	Science and Engineering
Course title	Systems Security II
Abbreviated course title	SYSTEMS SECURITY II

Course description

A continuation of CIT 482 that provides additional study of managerial/operational issues affecting networks security of enterprise systems. Emphasis on practical experience in penetration testing, vulnerability assessment, threat hunting, intrusion detection and prevention, malware analysis, and incident response. Develop awareness of the use of Artificial Intelligence (AI) techniques to protect against cybersecurity threats and evolving digital risks. ~~A continuation of CIT 482 that provides additional study and experience with managerial/operational issues affecting the security of enterprise computers and networks; examines available tools and opportunities in the field.~~

Credit hours 3

Repeatable

Yes

Number of repeats 2

For maximum credits 3

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

~~Lecture/Lab~~
Lecture

CIP Code 110103 - Information Technology.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		CIT 372	C	UG		
And		CIT 482	C	UG	)	

Corequisites

Equivalent Courses

Restrictions:

College restriction? No

Field of study restriction/major? Yes

Select:
Include

Major:

Field of stud/major restriction
555 - Computer Information Tech

Classification restriction? No

Departmental Restrictions

Reason for changing the course
Updating the course curricula with CompTIA Cybersecurity Analyst (CySA+) new certification. Expanding the course material with CompTIA AI security (SecAI+) newly released certification. ~~add learning outcomes and outline to Courseleaf~~

Is this related to other courses at WKU?

No

What departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

NA

Is this course part of a program that leads to teacher certificate?	No
Are you seeking Colonnade approval for this course?	No

Student Learning Outcomes

#	Student Learning Outcomes
1	Perform penetration testing and interpret output. ~~implement security controls.~~
2	Conduct vulnerability assessments and implement intrusion detection and prevention. ~~Implement physical security and countermeasures. Identify social engineering techniques.~~
3 ~~4~~	Conduct threat hunting and implement intrusion detection and prevention. ~~Perform enumeration with Nmap and Metasploit.~~
4 ~~3~~	Combat malware and perform sniffing by analyzing packet captures, scripts, regular expressions, JSON, and XML. ~~Perform reconnaissance and implement countermeasures. Perform network scanning with Nmap, Zenmap, etc.~~
5	Analyze how Artificial Intelligence (AI) enables or enhances cybersecurity attacks and implement physical security and compensating controls. ~~Conduct vulnerability assessments.~~
6 ~~7~~	Compare and contrast AI types and techniques used in cybersecurity and explain the importance of data security throughout the AI life cycle security. ~~Combat malware, perform sniffing and implement countermeasures.~~
7 ~~8~~	Use AI-enabled tools to facilitate and automate security tasks. ~~Implement Intrusion Detection and Prevention Systems, firewalls, honeypots, and DNS sinkholes. Exploit Cross-Site scripting vulnerabilities.~~
8 ~~6~~	Explain AI governance structures and risks and the impact of compliance on business use and development of AI. ~~Implement privilege escalation, manage threats, and certificates.~~

Content outline

#	Topic
1	Penetration Testing/Vulnerability Assessment and Security Controls. ~~Penetration testing and security controls~~

#	Topic
2 ~~4~~	Intrusion Detection and Prevention and Security Operations Center (SOC) Metrics. ~~Intrusion detection and prevention~~
3	Threat Hunting and Attack Frameworks. ~~Vulnerability assessment~~
4 ~~2~~	Combating Malware and Performing Sniffing: Packet, Script, and Data Analysis. ~~Physical security and countermeasures~~
5	AI and Data Concepts for Cybersecurity.
6	AI-Related Threats and Compensating Controls.
7	AI in Security and Its Misuse.
8	AI Governance, Risks, and Compliance.

Student expectations and requirements

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Tentative texts, course materials, and special equipment

CertMaster/Testout.

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

Bryan Reaka (bryan.reaka) (09/21/26 10:10 am): Rollback: name of proponent incorrect

Stuart Burris (stuart.burris) (09/28/26 10:19 am): Rollback: Rolled back at Yaser's request.

Bryan Reaka (bryan.reaka) (10/23/26 10:03 am): Rollback: Add CIT 372 as prerequisite

Key: 2007

Course Change Request

New Course Proposal

Date Submitted: 10/24/26 2:54 pm

Viewing: CM 180 : Introduction to Construction Industry and Professional Ethics

Last revision: 10/24/26 2:54 pm

Changes proposed by: msn28768

Proposed Action

In Workflow

1. **EAS Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Course Inventory

Approval Path

1. 09/25/26 10:48 am Fadi Sibai (fadi.sibai): Approved for EAS Approval
2. 09/25/26 2:57 pm Stuart Burris (stuart.burris): Rollback to Initiator
3. 09/25/26 3:20 pm Fadi Sibai (fadi.sibai): Approved for EAS Approval
4. 09/28/26 7:43 am Stuart Burris (stuart.burris): Rollback to EAS Approval for SC Dean
5. 10/23/26 10:02 am Bryan Reaka (bryan.reaka): Rollback to Initiator
6. 10/25/26 1:40 pm Bryan Reaka (bryan.reaka): Approved for EAS Approval

Active

Contact(s)

Name	E-mail	Phone
Mi Sun An	mi.an@wku.edu	(270)745-2580

Term for implementation: Fall 2027

Academic Level: Undergraduate

Course prefix (subject area): CM - Construction Management

Course number: 180

Department: Engineering & Applied Sciences, School of

College: Science and Engineering

Course title

Introduction to Construction Industry and Professional Ethics

Abbreviated course title: INTRO CONSTR & ETHICS

Course description

An introduction to the construction industry and the construction management profession. Topics include industry sectors, project participants, project life cycle, construction management functions, career opportunities, professional communication, workplace expectations, and professional ethics. Emphasis is placed on professional responsibility, ethical decision-making, and preparation for academic and professional development in construction management.

Credit hours: 3

Repeatable

No

Default grade type: Standard Letter

Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Lecture

CIP Code: 460412 - Building/Construction Site Management/Manager.

Does this course have prerequisites

No

Corequisites

Equivalent Courses

Restrictions:

College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for developing the proposed course

The proposed course is intended to provide first-year Construction Management students with a foundational understanding of the construction industry, the construction management profession, and the professional and ethical expectations associated with careers in construction.

Students entering the Construction Management program may have limited knowledge of the structure of the construction industry, the roles and responsibilities of project participants, construction management functions, and career opportunities available within the profession. Providing this foundation early in the curriculum will help students understand the construction management profession and how subsequent coursework relates to professional construction practice.

The course will also introduce students to professional expectations and ethical responsibilities in the construction industry. Students will examine professional behavior, communication, teamwork, integrity, accountability, and ethical decision-making through construction-related situations and case studies. The course is intended to help students begin developing the professional identity and ethical foundation expected of construction management graduates.

Is this related to other courses at WKU?

Yes

Related courses

CM 363 - Construction Estimating and Bidding

CM 462 - Construction Scheduling

CM 490 - Senior Research for Construction Management

What departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

Architectural Sciences programs concultation concerning potential duplication or overlap and the impact of the proposed course on existing courses was planned, but there was no remark in the meeting from the program coordinator of the Architectural Sciences.

RESPONSE

One concern was raised by the Civil Engineering Program Coordinator regarding the relationship between the proposed CM 180 course and existing courses CM 363, CM 462, and CM 490.

CM 180 is an introductory course designed to provide students with a foundational understanding of the construction management discipline, including its professional practices, responsibilities, and ethical considerations. In contrast, CM 363, CM 462, and CM 490 are upper-level courses that focus on specialized knowledge and the application of construction management principles.

Therefore, the relationship between CM 180 and these upper-level courses is both natural and academically appropriate, as introductory courses are expected to establish foundational knowledge that students will further develop and apply in advanced coursework.

While these courses may share certain fundamental concepts, their instructional depth, learning objectives, and expected student competencies differ substantially. Such relationships reflect the intentional progression of knowledge and skills within the Construction Management curriculum rather than unnecessary course duplication.

Accordingly, the identified course relationships are legitimate and consistent with a well-structured curriculum that supports progressive student learning from introductory concepts to advanced professional applications.

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

2

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

30-35

How many students per academic year are expected to enroll?

60-70

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

The Construction Management program has approximately 230 enrolled students as of Fall 2026.
CM 180 is intended as an introductory course for students entering the Construction Management program.
Based on current program enrollment and anticipated enrollment of new and early-program Construction Management students, approximately 30 or more students are expected to enroll in CM 180 each semester. The course will be offered once in the Fall semester and once in the Spring semester, resulting in an anticipated annual enrollment of approximately 60–70 students.

How are these related?

CM 180 will serve as a foundational course for the Construction Management curriculum. The course will introduce construction terminology, industry sectors, project participants, construction management functions, professional expectations, and ethical responsibilities that students will encounter throughout subsequent Construction Management courses.
Unlike upper-level Construction Management courses that focus on specific technical and managerial competencies, CM 180 will provide an introductory overview of the construction industry and establish a professional and ethical foundation for continued study in the program.

Is this course part of a program that leads to teacher certificate?	No
Are you seeking Colonnade approval for this course?	No

Student Learning Outcomes

#	Student Learning Outcomes
1	Describe the construction industry, major industry sectors, project participants, and their roles and responsibilities.
2	Explain major phases of a construction project and fundamental functions of construction management throughout the project life cycle.
3	Identify career pathways, professional skills, communication practices, and workplace expectations within the construction industry.

#	Student Learning Outcomes
4	Apply professional and ethical principles to common situations and decisions encountered in construction practice.

Content outline

#	Topic
1	Introduction to the Construction Industry – industry sectors, types of construction, industry characteristics, and basic construction terminology
2	Construction Projects and Participants – project life cycle, project delivery, owners, designers, contractors, subcontractors, suppliers, and other stakeholders
3	Construction Management Functions – introduction to estimating, scheduling, safety, quality, contracts, project coordination, and project management
4	Construction Careers and Professional Development – career pathways, professional communication, teamwork, leadership, workplace expectations, and professional development
5	Professional Ethics in Construction – professional responsibility, work ethic, integrity, accountability, ethical decision-making, conflicts of interest, and ethical issues in construction practice

Student expectations and requirements

- Students are expected to participate and engage with learning. They are required to complete assigned readings, assignments, case studies, quizzes, and examinations.
- Students will explore construction industry sectors, project participants, construction management functions, and career opportunities. Students will also examine construction-related situations and case studies involving professional responsibility, communication, teamwork, integrity, accountability, conflicts of interest, and ethical decision-making. Activities may include career exploration, discussions with construction industry professionals, and analysis of professional and ethical issues encountered in construction practice.

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Did you complete the Library Resources Form for New Courses?

No

Tentative texts, course materials, and special equipment

Professional Ethics for the Construction Industry
Rebecca Mirsky and John Schaufelberger
Routledge

Special equipment, materials, or library resources needed

No specialized equipment or laboratory resources are required. Existing classroom technology, computer resources, library resources, and Construction Management program resources are expected to support the course.

Additional information

Supporting documentation

Reviewer Comments

Stuart Burris (stuart.burris) (09/25/26 2:57 pm): Rollback: To remove Temporary Course designation
Stuart Burris (stuart.burris) (09/28/26 7:43 am): Rollback: Rolled back are Bryan Reaka's request.
Bryan Reaka (bryan.reaka) (10/23/26 10:02 am): Rollback: Remove Some in related courses

Key: 10269

Course Change Request

New Course Proposal

Date Submitted: 09/25/26 2:58 pm

Viewing: CM 240 : Construction Plan Reading

Last revision: 09/25/26 2:58 pm

Changes proposed by: msn28768

Proposed Action

Active

Contact(s)

In Workflow

1. **EAS Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Course Inventory

Approval Path

1. 09/25/26 10:49 am Fadi Sibai (fadi.sibai): Approved for EAS Approval
2. 09/25/26 2:57 pm Stuart Burris (stuart.burris): Rollback to Initiator
3. 09/25/26 3:20 pm Fadi Sibai (fadi.sibai): Approved for EAS Approval
4. 09/28/26 7:44 am Stuart Burris (stuart.burris): Rollback to EAS Approval for SC Dean
5. 10/23/26 9:59 am Bryan Reaka (bryan.reaka): Approved for EAS Approval

Name	E-mail	Phone
Mi Sun An	mi.an@wku.edu	(270)745-2580

Term for implementation: Fall 2027

Academic Level: Undergraduate

Course prefix (subject area): CM - Construction Management

Course number: 240

Department: Engineering & Applied Sciences, School of

College: Science and Engineering

Course title
Construction Plan Reading

Abbreviated course title: PLAN READING

Course description
Introduction to the interpretation and use of construction drawings for building projects. Topics include drawing organization, symbols and conventions, architectural and structural drawings, civil/site drawings, mechanical, electrical, and plumbing drawings, schedules, details, sections, and coordination among construction documents. Emphasis is placed on locating, interpreting, and integrating information from multiple drawings to support construction planning, estimating, and project execution.

Credit hours: 3

Repeatable
No

Default grade type: Standard Letter

Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type
Lecture

CIP Code: 460412 - Building/Construction Site Management/Manager.

Does this course have prerequisites

No

Corequisites

Equivalent Courses

Restrictions:

College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for developing the proposed course

The proposed course is intended to provide Construction Management students with systematic and comprehensive instruction in reading and interpreting construction drawings before they enter upper-level construction management courses.

The ability to accurately interpret construction drawings is fundamental to construction management practice and supports learning in estimating, scheduling, construction methods, project management, and related upper-level courses. Currently, plan-reading skills are introduced or reinforced within several Construction Management courses; however, students would benefit from completing a dedicated course focused on construction drawings before applying these skills to more advanced construction management tasks.

CM 240 will establish a common foundation in construction-document literacy, including drawing organization, symbols, architectural and structural drawings, civil/site drawings, MEP drawings, schedules, sections, details, and coordination among different drawing disciplines. Students will develop the ability to locate, interpret, and integrate information from construction drawings and apply that information to construction-related problems.

The course will become a prerequisite for upper-level courses in which construction drawing interpretation is necessary for successful completion of course activities, including CM 363: Estimating and Bidding I.

Is this related to other courses at WKU?

No

What departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

The Civil Engineering and Architectural Sciences programs will be consulted concerning potential duplication or overlap and the impact of the proposed course on existing courses.

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

2

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

30-35

How many students per academic year are expected to enroll?

60-70

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

The Construction Management program has approximately 230 enrolled students as of Fall 2026. CM 240 is intended to become part of the required Construction Management curriculum and will serve as a foundational course prior to upper-level courses such as CM 363: Estimating and Bidding I.

Based on current program enrollment and anticipated student progression through the Construction Management curriculum, approximately 30 or more students are expected to enroll in CM 240 each semester. The course will therefore be offered once in the Fall semester and once in the Spring semester, resulting in an anticipated annual enrollment of approximately 60–70 students.

Is this course part of a program that leads to teacher certificate? No

Are you seeking Colonnade approval for this course? No

Student Learning Outcomes

#	Student Learning Outcomes
1	Interpret construction drawing conventions, including symbols, abbreviations, scales, dimensions, annotations, and drawing references.
2	Locate and interpret construction information from architectural, civil, structural, mechanical, electrical, and plumbing drawings, including plans, elevations, sections, details, and schedules.

#	Student Learning Outcomes
3	Integrate information across multiple drawings and disciplines to understand building systems, assemblies, and construction conditions and identify coordination issues.
4	Apply information obtained from construction drawings to construction management tasks, including quantity identification, estimating, planning, and project coordination.

Content outline

#	Topic
1	Construction Drawing Fundamentals – drawing organization, scales, symbols, abbreviations, dimensions, annotations, and references
2	Architectural and Civil Drawings – floor plans, elevations, sections, details, schedules, site plans, grading, and utilities
3	Structural Drawings – foundations, structural framing systems, structural members, connections, and details
4	Mechanical, Electrical, and Plumbing (MEP) Drawings – major building systems, components, layouts, and drawing conventions
5	Construction Drawing Coordination and Application – integrating information across disciplines, identifying coordination issues, and applying drawing information to quantity identification, estimating, planning, and project coordination

Student expectations and requirements

• Students are expected to actively participate and engage in course learning activities. Students will complete assigned readings, plan-reading exercises, drawing interpretation assignments, quizzes, and examinations. Students will work with complete or partial construction drawing sets to locate, interpret, and integrate information from architectural, civil, structural, mechanical, electrical, and plumbing drawings.

• Assignments will require students to interpret dimensions, symbols, schedules, sections, details, and drawing references; trace information across multiple sheets; identify building components and assemblies; and recognize potential inconsistencies or coordination issues among drawings. Students will also complete applied exercises that connect construction drawing interpretation with upper-level construction management tasks such as quantity identification, estimating, and project planning.

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Did you complete the Library Resources Form for New Courses?

No

Tentative texts, course materials,

and special
equipment

Print Reading for Construction
Walter C. Brown and Daniel P. Dorfmueller
Goodheart-Willcox (G-W)

Special equipment, materials, or library resources needed

NONE

Additional information

Supporting documentation

Reviewer Comments

Stuart Burris (stuart.burris) (09/25/26 2:57 pm): Rollback: To remove Temporary Course designation
Stuart Burris (stuart.burris) (09/28/26 7:44 am): Rollback: Rolled back are Bryan Reaka's request.

Key: 10267

Course Change Request

New Course Proposal

Date Submitted: 10/14/26 2:39 pm

Viewing: CM 270 : Construction Information Technology

Last revision: 10/23/26 12:52 pm

Changes proposed by: msn28768

In Workflow

1. **EAS Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Course Inventory

Approval Path

1. 10/23/26 10:00 am Bryan Reaka (bryan.reaka): Approved for EAS Approval

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
Mi Sun An	mi.an@wku.edu	2707452580

Term for implementation	Fall 2027		
Academic Level	Undergraduate		
Course prefix (subject area)	CM - Construction Management	Course number	270
Department	Engineering & Applied Sciences, School of		
College	Science and Engineering		

Course title

Construction Information Technology

Abbreviated course title	CONSTRUCTION INFO TECH

Course description

Introduction to digital technologies and software applications used to manage construction projects. Topics include electronic spreadsheets, building information modeling (BIM), digital plan reading tools, quantity takeoff and estimating, scheduling, and construction project management platforms.

Emphasis is placed on using digital tools to support construction planning, cost management, documentation, coordination, communication, and decision-making.

Credit hours 3

Repeatable

No

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Lecture

CIP Code 46.0412 - 46.0412

Does this course have prerequisites

No

Corequisites

Equivalent Courses

Restrictions:

College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for developing the proposed course

The proposed course will be a required component of the Construction Management curriculum aligned with ACCE accreditation, providing all students with foundational digital technology competencies needed for subsequent coursework and professional practice. Construction managers use electronic tools to organize

project information, perform calculations, interpret digital drawings and models, develop estimates and schedules, track documents, and communicate with project participants. A dedicated required course will provide consistent hands-on instruction in spreadsheet applications, digital takeoff, BIM, scheduling, and project management platforms rather than relying on incidental exposure in other courses. Students will use integrated project exercises to apply these technologies to construction processes and develop skills that can be extended in advanced estimating, scheduling, BIM, and project management courses.

Is this related to other courses at WKU?

No

What departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

N/A

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

2

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

30-35

How many students per academic year are expected to enroll?

60-70

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

The Construction Management program has approximately 230 enrolled students as of Fall 2026. As a proposed required course, CM 270 is expected to serve students progressing through the Construction Management curriculum rather than a limited elective population. Approximately 30–35 students are projected in each of the Fall and Spring offerings, or 60–70 students annually. Actual demand will depend on cohort progression and the approved degree plan.

Is this course part of a program that leads to teacher certificate?	No

Are you seeking Colonnade approval for this course?	No

Student Learning Outcomes

#	Student Learning Outcomes
1	Explain the functions and applications of digital technologies used in construction estimating, scheduling, documentation, coordination, and project management.
2	Use electronic spreadsheets and digital tools to organize project data, perform construction calculations, and complete basic quantity takeoff tasks.
3	Apply digital tools to interpret project information, develop basic schedules, and support construction planning.
4	Use construction project management platforms to manage project documents, communicate project information, and track construction activities.

Content outline

#	Topic
1	Construction Information Technology Fundamentals – digital workflows, information management, and software integration.
2	Electronic Spreadsheets and Data Management – Microsoft Excel, formulas, construction calculations, and data organization.
3	BIM and Estimating Tools – model viewing, Bluebeam, document markup, measurement, and quantity takeoff.
4	Construction Scheduling Technologies – Scheduling tools such as Microsoft Project, activities, dependencies, critical path, and basic schedules.
5	Construction Project Management Platforms – Procore, RFIs, submittals, document control, progress tracking, and project communication.

Student expectations and requirements

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Did you complete the Library Resources Form for New Courses?

No

Tentative texts, course materials, and special equipment

To be determined

Special equipment, materials, or library resources needed

Access to computers capable of running spreadsheet, digital takeoff, BIM viewing, scheduling, and project management software is required.

Existing computer labs and educational licenses will be used where available; additional software access or instructional accounts may be needed.

Additional information

Supporting documentation

Reviewer Comments

Key: 10295

Course Change Request

New Course Proposal

Date Submitted: 09/25/26 11:06 am

Viewing: CM 351 : Building Information Modeling in Construction

Last revision: 09/25/26 2:12 pm

Changes proposed by: msn28768

In Workflow

1. **EAS Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Course Inventory

Approval Path

1. 09/25/26 2:12 pm Fadi Sibai (fadi.sibai): Approved for EAS Approval
2. 09/28/26 7:44 am Stuart Burris (stuart.burris): Rollback to EAS Approval for SC Dean
3. 10/23/26 10:00 am Bryan Reaka (bryan.reaka): Approved for EAS Approval

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
Mi Sun An	mi.an@wku.edu	(270)745-2580

Term for implementation	Fall 2027		
Academic Level	Undergraduate		
Course prefix (subject area)	CM - Construction Management	Course number	351

Department Engineering & Applied Sciences, School of

College Science and Engineering

Course title
Building Information Modeling in Construction

Abbreviated course title BIM IN CONSTRUCTION

Course description
Application of Building Information Modeling (BIM) to construction management. Topics include model-based project coordination, constructability review, quantity takeoff, estimating, scheduling, site planning, clash detection, and project communication. Emphasis is placed on using and managing building information models to support construction planning, coordination, and decision-making.

Credit hours 3

Repeatable
No

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type
Lecture/Lab

CIP Code 460412 - Building/Construction Site Management/Manager.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
	(	CM240	C		)	No

Corequisites

Equivalent Courses

Restrictions:

College restriction? No

Field of study restriction/major?	No
Classification restriction?	No
Departmental Restrictions	

Reason for developing the proposed course

The proposed course is intended to provide Construction Management students with knowledge and practical experience in the use of Building Information Modeling (BIM) for construction planning, coordination, and project management.

BIM is used by construction managers and contractors to support activities such as constructability review, multidisciplinary coordination, clash detection, quantity takeoff, estimating, scheduling, site planning, and communication among project participants. Construction Management students therefore need to understand not only how building information models are created, but more importantly how model information is interpreted, coordinated, and applied to construction decisions.

CM 351 will focus on the construction management applications of BIM. Students will work with building information models and associated project information to support construction planning and decision-making throughout the construction process.

The course will prepare students to use BIM as a construction management tool and to participate effectively in model-based collaboration with owners, architects, engineers, subcontractors, and other project participants.

Is this related to other courses at WKU?

Yes

Related courses

AS 351 - Building Information Modeling

What departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

The Architectural Sciences program was consulted concerning potential duplication or conflict with AS 351: Building Information Modeling. The proposed CM 351 focuses on construction management applications of BIM, including constructability, coordination, quantity takeoff, estimating, scheduling, site planning, and construction decision-making, whereas AS 351 focuses primarily on architectural modeling, parametric models, building data, and construction document production. Dr. Aly - who proposed the course, AS 351, 2026-09-25.

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

2

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

30-35

How many students per academic year are expected to enroll?

60-70

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

The Construction Management program has approximately 230 enrolled students as of Fall 2026. CM 351 is intended to provide Construction Management students with BIM knowledge and skills applicable to construction planning, coordination, estimating, scheduling, and project management. Based on current program enrollment and anticipated student progression through the Construction Management curriculum, approximately 30 or more students are expected to enroll in CM 351 each semester. The course will therefore be offered once in the Fall semester and once in the Spring semester, resulting in an anticipated annual enrollment of approximately 60–70 students.

How are these related?

The proposed CM 351 is related to AS 351: Building Information Modeling, offered by the Architectural Sciences program. However, the two courses serve different disciplinary and professional purposes.

AS 351 focuses on architectural modeling and the creation of information-embedded parametric models. Its existing course description specifically identifies it as an advanced course in architectural modeling, including creation of object-oriented databases, embedding building information into parametric modeling systems, and extracting building data. Its content also includes parametric construction-document production and solving building design issues in a 3D environment.

In contrast, CM 351 will focus on the use and management of BIM by construction managers and contractors. Applications will include constructability review, coordination among building systems, clash detection, quantity takeoff, estimating, scheduling, site planning, and model-based project communication.

Therefore, CM 351 is intended to complement rather than duplicate AS 351 by addressing BIM from the perspective of construction management and project delivery.

Is this course part of a program that leads to teacher certificate?

No

Are you seeking Colonnade approval for this course?	No

Student Learning Outcomes

#	Student Learning Outcomes
1	Explain BIM concepts, processes, and applications within construction management and project delivery
2	Interpret and coordinate multidisciplinary building information models to identify constructability and coordination issues.
3	Extract and apply model information to construction management tasks, including quantity takeoff, estimating, scheduling, and site planning.
4	Use BIM tools and workflows to support construction planning, project coordination, communication, and decision-making.

Content outline

#	Topic
1	BIM Fundamentals and Construction Applications – BIM concepts, model information, BIM workflows, project delivery, and roles of construction participants
2	Model Review and Constructability – model navigation, multidisciplinary model review, constructability analysis, and identification of construction issues
3	BIM Coordination and Clash Detection – architectural, structural, and MEP coordination; clash detection; issue tracking; and coordination workflows
4	Model-Based Construction Planning – quantity takeoff, estimating, scheduling, sequencing, site logistics, and visualization
5	BIM Collaboration and Project Management – model-based communication, information exchange, BIM execution, project coordination, and construction decision-making

Student expectations and requirements

- Students are expected to participate and engage in course learning activities. They are required to complete assigned readings, BIM exercises, construction case studies, individual and/or team assignments, quizzes, examinations, and model-based project activities.
- Students will work with building information models to perform construction-related tasks such as constructability review, multidisciplinary coordination, clash detection, quantity takeoff, estimating, scheduling, sequencing, and site planning. Students will also use BIM-based information to communicate construction issues and support project decisions.
- Course activities will emphasize the role of the construction manager in using, reviewing, coordinating, and managing model information, rather than primarily creating architectural designs.

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Did you complete the Library Resources Form for New Courses?

No

Tentative texts, course materials, and special equipment

TBA

Special equipment, materials, or library resources needed

Students will require access to computers capable of running BIM and construction coordination software. Appropriate software may include BIM authoring, model review, clash detection, quantity takeoff, scheduling, and project coordination applications.

Existing computer laboratory resources and educational software licenses will be used where available. Students will also require access to construction drawing sets and multidisciplinary building information models for course exercises and projects.

Additional information

Supporting documentation

Reviewer Comments

Fadi Sibai (fadi.sibai) (09/25/26 2:12 pm): According to Dr. An, AS351 covers less than 50% of the material to be covered by CM351.

Stuart Burris (stuart.burris) (09/28/26 7:44 am): Rollback: Rolled back at Bryan Reaka's request.

Key: 10270

Course Change Request

New Course Proposal

Date Submitted: 10/24/26 2:47 pm

Viewing: CM 380 : Construction Sustainability

Last revision: 10/24/26 2:47 pm

Changes proposed by: msn28768

Proposed Action

In Workflow

1. **EAS Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Course Inventory

Approval Path

1. 09/25/26 10:49 am Fadi Sibai (fadi.sibai): Approved for EAS Approval
2. 09/25/26 2:57 pm Stuart Burris (stuart.burris): Rollback to Initiator
3. 09/25/26 3:20 pm Fadi Sibai (fadi.sibai): Approved for EAS Approval
4. 09/28/26 7:44 am Stuart Burris (stuart.burris): Rollback to EAS Approval for SC Dean
5. 10/23/26 10:02 am Bryan Reaka (bryan.reaka): Rollback to Initiator
6. 10/25/26 1:39 pm Bryan Reaka (bryan.reaka): Approved for EAS Approval

Active

Contact(s)

Name	E-mail	Phone
Mi Sun An	mi.an@wku.edu	(270)745-2580

Term for implementation: Fall 2027

Academic Level: Undergraduate

Course prefix (subject area): CM - Construction Management

Course number: 380

Department: Engineering & Applied Sciences, School of

College: Science and Engineering

Course title

Construction Sustainability

Abbreviated course title: CONSTRUCTION SUSTAINABILITY

Course description

An introduction to sustainability principles and practices in the construction industry. The course examines environmental, economic, and social dimensions of sustainable construction throughout the building life cycle. Topics include sustainable site development, energy and water efficiency, material selection, waste management, indoor environmental quality, green building rating systems, and sustainable construction practices. Students will apply sustainability principles to construction planning and decision-making.

Credit hours: 3

Repeatable

No

Default grade type: Standard Letter

Alternate grade type(s):

Is this course intended to span more than one term?

No

Schedule type

Lecture

CIP Code: 460412 - Building/Construction Site Management/Manager.

Does this course have prerequisites

No

Corequisites

Equivalent Courses

Restrictions:

College restriction?	No
Field of study restriction/major?	No
Classification restriction?	No
Departmental Restrictions	

Reason for developing the proposed course

The proposed course is intended to provide Construction Management students with knowledge and skills related to sustainability in the planning, construction, operation, and management of the built environment. Sustainability has become an important consideration in construction management as project teams increasingly consider environmental impacts, resource efficiency, project costs, occupant well-being, and long-term building performance when making project decisions. Construction managers need to understand how decisions concerning materials, construction methods, site operations, energy and water use, waste, and project delivery can influence sustainability outcomes.

CM 380 will provide a dedicated course in which students examine the environmental, economic, and social dimensions of sustainable construction and apply sustainability principles to construction-related decisions. The course will also introduce students to green building practices and rating systems and help them evaluate sustainability considerations throughout the building life cycle.

Is this related to other courses at WKU?

No

What departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

Architectural Sciences program was consulted, Dr. Mansour 2026-09-25.
Dr. Mansour commented following:
"Related courses are marked “No,” but the course relates to AS 369, AS 469, AS 470, CE 352, SEAS 325, and CM 261. Please describe each relationship, record AS’s response to the consultation, and strengthen the construction-phase focus (e.g., waste management, IAQ during construction, sustainable procurement, credit documentation) to distinguish the course from AS content"

RESPONSE:

Proposed Course: CM 380 – Construction Sustainability

Although the proposed CM 380: Construction Sustainability course shares certain sustainability-related concepts with existing courses, its scope, learning objectives, and disciplinary perspective are substantially different. The identified courses primarily address individual aspects of sustainability within architectural design, land development, environmental engineering, or construction materials and methods. In contrast, CM 380 is designed to provide a comprehensive understanding of sustainability in construction management by integrating environmental, economic, and social dimensions of sustainability into construction planning, execution, and management decisions.

The relationships between CM 380 and the identified courses are explained below.

1. AS 369 – Architectural Design Studio

AS 369 is a studio-based course designed primarily for Architectural Science students. The course addresses environmental influences on building design, emphasizing how environmental conditions and considerations affect architectural design decisions.

Although environmental considerations are relevant to sustainability, the course primarily approaches these concepts from an architectural design perspective rather than a construction management perspective.

CM 380, on the other hand, focuses on how sustainability principles are implemented during the construction phase. The course addresses construction waste management, sustainable procurement, resource efficiency, pollution prevention, indoor air quality management during construction, and the management of sustainability-related project requirements.

Therefore, while both courses address environmental considerations, their instructional objectives and practical applications are substantially different.

2. AS 469 – Sustainable Architectural Design Studio

AS 469 is a studio-based course that focuses on sustainable architectural design. The course emphasizes incorporating sustainability principles into building design decisions and developing environmentally responsible architectural solutions.

In contrast, CM 380 emphasizes the implementation and management of sustainability practices during construction rather than the design of sustainable buildings.

For example, while architectural design courses may address the selection of environmentally responsible building systems and materials, CM 380 examines how construction managers procure specified materials, coordinate suppliers and subcontractors, minimize material waste, manage construction-related environmental impacts, and document compliance with sustainability requirements.

Thus, AS 469 and CM 380 address different stages and professional responsibilities within the building delivery process. Their subject matter is complementary rather than duplicative.

3. AS 470 – Land Development

AS 470 focuses on land development, with its sustainability-related content primarily addressing environmental considerations associated with land development activities.

Although these topics are relevant to environmental sustainability, they represent only one dimension of the broader sustainability framework.

CM 380 addresses sustainability from a more comprehensive construction management perspective, integrating environmental, economic, and social considerations into construction processes and management decisions.

In addition to environmental sustainability, CM 380 examines economic considerations such as life-cycle costs, resource efficiency, and cost implications of sustainable construction practices, as well as social considerations such as worker health and safety, community impacts, and responsible construction practices.

Therefore, although the two courses may share certain environmental sustainability concepts, AS 470 focuses on land development, whereas CM 380 emphasizes integrated sustainability practices throughout construction operations and project management.

4. CE 352 – Environmental Engineering

CE 352 addresses environmental engineering principles, with course topics primarily related to water, air quality, and landfill management. These subjects focus on specific environmental issues and their associated engineering principles and applications.

Although these topics are relevant to environmental sustainability, the course does not provide a comprehensive examination of sustainability within the context of construction management.

CM 380 approaches sustainability from the perspective of construction planning, execution, and management. Students examine how environmental considerations are integrated with economic

management. Students examine how environmental considerations are integrated with economic and social factors when making construction-related decisions.

For example, CM 380 addresses construction waste reduction, sustainable procurement, resource management, environmental protection during construction, and the implications of sustainability decisions for project costs, schedules, workforce conditions, and surrounding communities.

Accordingly, CE 352 and CM 380 differ in both disciplinary focus and instructional objectives.

5. SEAS 325

SEAS 325 has been identified as potentially related to CM 380 due to its sustainability-related subject matter. However, the extent of the relationship should be evaluated based on the specific course description and learning objectives.

Any overlap in general sustainability concepts would be distinguished from CM 380's emphasis on applying environmental, economic, and social sustainability principles to construction management practices.

CM 380 specifically addresses sustainability-related decisions and responsibilities encountered during construction planning, procurement, project execution, resource allocation, and project performance evaluation.

Therefore, shared sustainability terminology or foundational concepts would not necessarily constitute duplication of the proposed course's learning objectives.

6. CM 261 – Construction Methods and Materials

CM 261 introduces students to construction materials, construction methods, and their practical applications in building construction.

According to the course instructor, sustainable material selection may be discussed as part of the course. However, sustainability is not a required instructional component, and the course does not systematically address sustainability principles or their integration into construction management practices.

CM 380 builds upon the foundational knowledge introduced in CM 261 by examining how construction materials, methods, and management decisions affect environmental, economic, and social sustainability outcomes.

For example, students will evaluate sustainable material procurement, construction waste reduction, resource efficiency, cost implications of sustainable construction practices, and the social impacts of construction activities.

Thus, CM 261 provides foundational technical knowledge, while CM 380 focuses on the integrated application of sustainability principles to construction management decisions.

Distinct Scope and Construction-Phase Focus of CM 380

The primary distinction between CM 380 and the identified courses is that CM 380 examines sustainability as an integrated responsibility of construction managers rather than as an isolated environmental issue or architectural design consideration.

Sustainability in construction management extends beyond minimizing environmental impacts. Construction managers must balance environmental performance with economic feasibility, worker well-being, community impacts, resource availability, construction schedules, and project requirements.

Accordingly, CM 380 will emphasize the following areas:

Environmental Sustainability

Construction waste management, reduction, reuse, and recycling.

Sustainable material selection and procurement.

Pollution prevention and environmental protection during construction.

Construction-phase indoor air quality management.

Efficient use of energy, water, and construction resources.

Economic Sustainability

Life-cycle cost considerations in construction decisions.

Cost implications of sustainable materials and construction methods.

Resource optimization and material waste reduction.

Balancing sustainability objectives with project budgets and schedules.

Evaluating economic trade-offs associated with sustainable construction practices.

Social Sustainability

Construction worker health, safety, and well-being.

Community impacts of construction activities.

Responsible sourcing and ethical procurement.

Stakeholder considerations and socially responsible construction practices.

Construction-Phase Sustainability Management

Developing and implementing construction waste management plans.

Coordinating sustainable procurement with suppliers and subcontractors.

Implementing construction-phase indoor air quality management practices.

Monitoring sustainability performance during construction.

Preparing and maintaining documentation supporting applicable green building certification requirements, including construction-related LEED credits.

Evaluating sustainability-related trade-offs in construction planning, scheduling, and project execution.

These topics distinguish CM 380 from courses primarily concerned with sustainable design, land development, environmental engineering, or general construction materials and methods.

Conclusion

Although the identified courses may cover certain concepts related to sustainability, their coverage is generally limited to specific disciplinary applications or individual aspects of environmental sustainability. None of the identified courses, based on the information reviewed, provides the comprehensive integration of environmental, economic, and social sustainability principles into construction management practices that is proposed for CM 380.

It is important to distinguish between courses that introduce sustainability-related concepts and courses that systematically prepare students to apply sustainability principles within their professional discipline.

The proposed CM 380 course addresses this distinction by focusing on the responsibilities of construction managers in planning, implementing, monitoring, and evaluating sustainable construction practices. Its emphasis on construction-phase operations, resource management, project costs, workforce and community impacts, and sustainability compliance differentiates it from existing offerings.

Therefore, CM 380 is intended to complement existing courses rather than duplicate their content. The proposed course fills an important curricular gap by preparing Construction Management students to integrate sustainability considerations into real-world construction decisions and practices.

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

2

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

30-35

How many students per academic year are expected to enroll?

60-70

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

The Construction Management program has approximately 230 enrolled students as of Fall 2026. Based on current program enrollment and anticipated student progression through the Construction Management curriculum, approximately 30 or more students are expected to enroll in CM 380 each semester.

The course will therefore be offered once in the Fall semester and once in the Spring semester, resulting in an anticipated annual enrollment of approximately 60–70 students.

Is this course part of a program that leads to teacher certificate? No

Are you seeking Colonnade approval for this course? No

Student Learning Outcomes

#	Student Learning Outcomes
1	Explain sustainability principles and their environmental, economic, and social implications for construction projects.
2	Evaluate sustainable strategies related to sites, energy, water, materials, waste, and indoor environmental quality.

#	Student Learning Outcomes
3	Analyze construction practices and project decisions using sustainability principles and green building criteria.
4	Apply sustainable construction principles to construction planning and decision-making throughout the building life cycle.

Content outline

#	Topic
1	Principles of Sustainable Construction – environmental, economic, and social sustainability; building life-cycle considerations
2	Sustainable Sites, Energy, and Water – site development, energy efficiency, renewable energy, water conservation, and resource efficiency
3	Sustainable Materials and Construction Practices – material selection, embodied impacts, responsible sourcing, construction methods, and waste management
4	Green Buildings and Performance – indoor environmental quality, building performance, green building standards, and rating systems
5	Sustainability in Construction Management – integrating sustainability into estimating, scheduling, procurement, project delivery, and construction decision-making

Student expectations and requirements

• Students are expected to participate and engage in course learning activities. Students will complete assigned readings, assignments, case studies, quizzes, and examinations related to sustainable construction.
• Students will analyze sustainable construction strategies and evaluate environmental, economic, and social considerations associated with construction decisions. Assignments and case studies may require students to evaluate building materials, site practices, energy and water strategies, construction waste, indoor environmental quality, and green building criteria. Students will also apply sustainability principles to construction management problems and project scenarios.

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Did you complete the Library Resources Form for New Courses?

No

Tentative texts, course materials, and special equipment

Sustainable Construction: Green Building Design and Delivery
Charles J. Kibert

Special equipment, materials, or library resources needed

None

Additional information

Supporting documentation

Reviewer Comments

Stuart Burris (stuart.burris) (09/25/26 2:57 pm): Rollback: To remove Temporary Course designation

Stuart Burris (stuart.burris) (09/28/26 7:44 am): Rollback: Rolled back at Bryan Reaka's request.

Bryan Reaka (bryan.reaka) (10/23/26 10:02 am): Rollback: Some more detail in related courses

Key: 10268

Course Change Request

New Course Proposal

Date Submitted: 09/28/26 10:11 am

Viewing: MFGE 237 : Statics for Mechatronics

Last revision: 09/28/26 10:11 am

Changes proposed by: akm14692

Programs referencing this course

5015: Mechatronics Engineering Technology, Bachelor of Science

In Workflow

1. **EAS Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Course Inventory

Approval Path

1. 09/21/26 10:10 am Bryan Reaka (bryan.reaka): Rollback to Initiator
2. 09/28/26 10:34 am Bryan Reaka (bryan.reaka): Approved for EAS Approval

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
A K M Foysal Ahmed	akmfoysal.ahmed@wku.edu	2707452086

Term for implementation	Spring 2027		
Academic Level	Undergraduate		
Course prefix (subject area)	MFGE - Manufacturing Engineering Technology	Course number	237
Department	Engineering & Applied Sciences, School of		
College	Science and Engineering		

Course title

Statics for Mechatronics

Abbreviated course title: STATICS FOR MECHATRONICS

Course description

This course introduces the fundamental principles of rigid-body mechanics, specifically tailored for mechatronics applications. The focus is on analyzing forces and moments acting on stationary structures and mechanical components.

To ensure students' understanding of mechanical equilibrium, this course emphasizes trigonometric and geometric vector based analysis. Students will learn to decompose forces, calculate resultants, solve equilibrium, moments, couples, trusses, frames, sheaves, pulleys, and friction related problems.

Credit hours: 3

Repeatable

Yes

Number of repeats: 2

For maximum credits: 3

Default grade type: Standard Letter

Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Lecture

CIP Code: 150407 - Mechatronics, Robotics, and Automation Engineering Technology/Technician.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
	(	Math 117	C or Better	UG	)	Yes

Corequisites

Equivalent Courses

Restrictions:

College restriction? Yes

Select:
Include

College:

College
Science and Engineering

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for developing the proposed course
Mechatronics students must know the forces and the effects of forces acting on bodies at rest, vector addition applied to the study of forces on a body from 2D and 3D perspectives. This course will help preparing the base for other courses in the program to be taught.

Is this related to other courses at WKU?
Yes

Related courses
CM 282 - Building Structures
EM 222 - Statics

What departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

Morteza Nurcheshmeh, Program Coordinator, Mechanical Engineering (Date Contacted: April 20, 2026)
Jason Wilson, Program Coordinator, Civil Engineering and Construction Management (Date Contacted: April 20, 2026)

How many sections of this course per academic year will be offered?
1

How many students per section are expected to enroll in

this proposed course?
15

How many students per academic year are expected to enroll?
15

How were these projections calculated? Explain any supporting evidence/data you have for arriving at these projections:
The projection is based on the number of students enrolled into the program every year.

How are these related?
-

Is this course part of a program that leads to teacher certificate? No

Are you seeking Colonnade approval for this course? No

Student Learning Outcomes

#	Student Learning Outcomes
1	Apply vector analysis principles to determine forces, moments, and equivalent force systems using trigonometric and geometric methods.
2	Analyze static equilibrium of particles and rigid bodies by constructing accurate Free Body Diagrams (FBDs) and solving governing equations for forces and moments.
3	Solve 2D structural problems involving trusses, frames, machines, pulleys, etc. to calculate internal and external reaction forces.
4	Evaluate 3D systems to conceptualize and compute force resultants and moments in space using vector mathematics and spatial visualization.

Content outline

#	Topic
1	Vector Foundations & Force Systems - Vector Analysis: 2D and 3D decomposition using trigonometry and geometry. - Resultants: Calculating resultant forces and direction cosines in space. - Moments & Couples: Scalar and vector cross-product methods for 2D and 3D. - Equivalent Systems: Reducing complex loads to a single force-couple system.
2	Principles of Equilibrium - Free Body Diagrams (FBD): Identification of support reactions and external loads. - Particle Equilibrium: Solving concurrent force systems in 2D and 3D. - Rigid Body Equilibrium: Applying equations of equilibrium (Sum of all F = 0, Sum of all M = 0). - Constraints: Analyzing statically determinate supports and reactions.
3	2D Structural Analysis & Machines - Trusses: Analyzing internal member forces using Method of Joints and Sections. - Frames & Machines: Solving for forces in structures with multi-force members. - Sheaves & Pulleys: Equilibrium of cable systems and mechanical advantage. - Dry Friction: Solving problems involving wedges, sliding, and tipping.
4	3D Analysis & Spatial Visualization - 3D Moments: Calculating moments about specific axes and points in space. - 3D Rigid Bodies: Solving equilibrium for 6 degrees of freedom.

Student expectations and requirements

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Did you complete the Library Resources Form for New Courses?

Yes

Tentative texts, course materials, and special equipment

Applied Statics and Strength of Materials

Seventh Edition

George F. Limbrunner, P.E.
Craig T. D'Allaird, P.E.

Pearson Publication

Special equipment, materials, or library resources needed

None

Additional information

Supporting documentation

Reviewer Comments

Bryan Reaka (bryan.reaka) (09/21/26 10:10 am): Rollback: proponent e-mil incorrect

Key: 10231

Course Change Request

Date Submitted: 10/23/26 10:05 am

Viewing: MFGE 490 ~~490A~~ : Senior Research for Mechatronics ~~Manufacturing~~ Engineering Technology

Also listed as: ~~MFGE 490A~~

Formerly known as: MFGE 490A

Last approved: 11/28/23 3:19 am

Last revision: 10/23/26 12:51 pm

Changes proposed by: bry60656

Programs referencing this course

MFGE 490:

: Smart Manufacturing

MFGE 490A:

Proposed Action

Active

Contact(s)

In Workflow

1. **EAS Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Course Inventory

Approval Path

1. 10/23/26 10:04 am Bryan Reaka (bryan.reaka): Rollback to Initiator
2. 10/23/26 10:06 am Bryan Reaka (bryan.reaka): Approved for EAS Approval

History

1. Dec 3, 2021 by Bryan Reaka (bryan.reaka)
2. Jun 22, 2023 by Jessica Dorris (jessica.dorris)
3. Nov 28, 2023 by Hanna Khouryieh (hanna.khouryieh)

Name	E-mail	Phone
Bryan Reaka ~~Greg Arbuckle~~	bryan.reaka@wku.edu ~~greg.arbuckle@wku.edu~~	270-745-7032 ~~270-745-2403~~

Review Type: Full Review ~~Expedited~~

Term for implementation: Spring 2027

Academic Level: Undergraduate

Course prefix (subject area): MFGE - Manufacturing Engineering Technology

Course number: 490 ~~490A~~

Department: Engineering & Applied Sciences, School of

College: Science and Engineering

Course title

Senior Research for Mechatronics ~~Manufacturing~~ Engineering Technology

Abbreviated course title: SR RES MECHATRONIC ENG TECH ~~SENIOR RESEARCH FOR MET~~

Course description

Students work on capstone research projects utilizing skills and knowledge from prior courses in the Mechatronics/ Manufacturing Engineering Technology program. This is a lecture lab course that will incorporate all aspects of manufacturing in a simulated facility.

Credit hours: 3

Repeatable

Yes

Number of repeats: 2

For maximum credits: 3

Default grade type: Pass/Fail ~~Standard Letter~~

Alternate grade type(s): Pass/Fail

Is this course intended to span more than one term?

No

Schedule type

Lecture/Lab

CIP Code: 150613 - Manufacturing Engineering Technology/Technician.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
	(	MFGE 355 ~~356~~	C	UG		Yes
Or		MFGE 365	C	UG		Yes
Or		MGT 314	C	UG	)	Yes
And		MFGE 390	C	UG		
And	(	MFGE 394	D	UG		Yes
Or		MFGE 396	D	UG	)	Yes

Corequisites

Equivalent Courses

Restrictions:

College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for changing the course

The old number MFGE 490A was a carry over of having multiple sections of MFGE senior research courses from different majors. The other major that used to use the suffix MFGE 490B has adjusted the curriculum and now that number is no longer used, therefor the curriculum now has no need for the letter "A" after 490.
Name change reflects the change of the program from Manufacturing Engineering Technology to Mechatronics Engineering Technology.
Grading change- The students work in groups in this simulated Industrial environment making it difficult for the instructor to asses a standard letter grade to each individual student. Having a Pass Fail grading scale allows the minimum standard to be the only criteria needed for assessment at the end of the course.
Change MFGE 356 to 355 and add the pre/co-requisite requirement of MFGE 355 or 365- this change is due to the two courses (355 and 365) being added to teh curriculum and the MFGE 356 being removed.
Change MFGE 394 to include MFGE 396 as a pre/co-requisite - this change reflects the addition of MFGE 396 to

the curriculum and is now required so this course is being added as a pre/co-requisite. ~~Adding course learning outcomes and outlines to course Leaf.~~

Is this related to other courses at WKU?

No

What departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

None - Inside of SEAS and specific to the Mechatronics Engineering Technology program ~~None~~

Is this course part of a program that leads to teacher certificate?

No

Are you seeking Colonnade approval for this course?

No

Student Learning Outcomes

#	Student Learning Outcomes
1 ~~2~~	Apply knowledge gained in previous courses to solve a technical or managerial problem.

Content outline

#	Topic
1	Hands-on research projects

Student expectations and requirements

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Tentative texts, course materials, and special equipment

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

Bryan Reaka (bryan.reaka) (10/23/26 10:04 am): Rollback: Change Abbreviated title

Key: 9340

Program Change Request

Date Submitted: 09/28/26 10:30 am

Viewing: 5015 : Mechatronics Engineering Technology, Bachelor of Science

Last approved: 03/09/26 1:51 pm

Last edit: 09/28/26 10:30 am

Changes proposed by: akm14692

Catalog Pages
Using this Program
Mechatronics Engineering Technology, Bachelor of Science (5015)

Proposed Action

In Workflow

1. **EAS Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Program Inventory

Approval Path

1. 09/21/26 10:09 am Bryan Reaka (bryan.reaka): Rollback to Initiator
2. 09/28/26 10:35 am Bryan Reaka (bryan.reaka): Approved for EAS Approval

History

1. Mar 22, 2021 by Rheanna Plemons (rheanna.plemons)
2. May 18, 2021 by Rheanna Plemons (rheanna.plemons)
3. May 18, 2021 by Rheanna Plemons (rheanna.plemons)
4. May 26, 2021 by Rheanna Plemons (rheanna.plemons)
5. Apr 22, 2022 by Jessica Dorris (jessica.dorris)

6. Apr 22, 2022 by Jessica Dorris (jessica.dorris)
7. Apr 22, 2022 by Jessica Dorris (jessica.dorris)
8. Sep 26, 2022 by Jessica Dorris (jessica.dorris)
9. Nov 15, 2022 by Jessica Dorris (jessica.dorris)
10. Apr 10, 2023 by Gregory Arbuckle (greg.arbuckle)
11. Jun 12, 2025 by Bryan Reaka (bryan.reaka)
12. Mar 9, 2026 by Ryan Wilson (ryan.wilson)

Active

Contact Person

Name	Email	Phone
A K M Foysal Ahmed	akmfoysal.ahmed@wku.edu	2707452086

Term of Implementation	2027-2028
Program Reference Number	5015
Review Type	Full Review
Academic Level	Undergraduate
Program Type	Major
Degree Types	Bachelor of Science
Department	Engineering & Applied Sciences, School of
College	Science and Engineering
Program Name (eg. Biology)	Mechatronics Engineering Technology, Bachelor of Science

Will this program have concentrations?

No

CIP Code	15.0407 - Mechatronics, Robotics, and Automation Engineering Technology/Technician.

Will this program lead to teacher certification?	No

Does the proposed program contain 25% or more new content not previously taught in another course at WKU? If yes, contact the Office of the Provost for additional SACSCOC proposal requirements

No

Catalog Content

Program Overview (Catalog field: Overview tab)

This program prepares individuals to apply basic engineering principles and advanced manufacturing technical skills in support of industrial operations. The major includes instruction in optimization theory, human factors, organizational behavior, industrial processes, industrial planning procedures, systems integration, quality, and project management. Graduates achieve positions of leadership in business and industry while practicing innovation in the global marketplace.

Program Description

A minor or second major is not required. Course requirements for the major are shown below. Students should consult with an advisor in planning their course schedules and career goals.

~~Project Lead the Way~~

~~The School of Engineering and Applied Sciences (SEAS) agrees to grant college level credit for secondary school students from certified Project Lead the Way (PLTW) schools who satisfy the following requirements:~~
~~First, students must complete the following two (2) PLTW courses with a grade of B or above and a 6 or above on the End of Course college credit exam: 1. Introduction to Engineering Design; and 2. Principles of Engineering~~
~~Second, students must complete two (2) of the following PLTW courses with a grade of B or above and a 6 or above on the End of Course college credit exam: Aerospace Engineering; Biological Engineering; Civil Engineering and Architecture; Computer Integrated Manufacturing; Computer Science and Software Engineering; Digital Electronics; Capstone Course – Engineering Design and Development~~
~~Third, students must meet the requirements for admission to Western Kentucky University and enroll in the Bachelor of Science in Manufacturing Engineering Technology program within SEAS. Finally, students requesting the credit must provide a written statement from the instructor of the PLTW program and the principal or guidance counselor, stating the student has successfully completed the program with the above specifications. In addition to the written statement, an official transcript should be submitted for verification.~~
~~If the previous four conditions are met, the following three (3) courses will be articulated to the student's Western Kentucky University record:~~

~~MFGE 120~~	~~Basic Electricity~~	~~3~~
~~MFGE 205~~	~~CADD for Manufacturing~~	~~3~~
~~AMS EL-L (Lower Level Undergraduate Technical Elective)~~		~~6~~
~~Total Hours~~		~~0~~

Curriculum Requirements (Catalog field: Program Requirements)

Program Requirements (67 hours)

Approved Shared Content from /shared/undergraduate-major-requirements/
Last Approved: May 21, 2026 2:57pm

A baccalaureate degree requires a minimum of 120 unduplicated semester hours. More information can be found at www.wku.edu/registrar/degree_certification.php.
Students who began WKU in the Fall 2014 and thereafter should review the Colonnade requirements located at: https://www.wku.edu/colonnade/colonnaderequirements.php.

Technical Core Courses		
Select one Finance Elective:		3
ACCT 110	Accounting for Decision Makers	
or ECON 202	Principles of Economics (Micro)	
or ECON 203	Principles of Economics (Macro)	
or FIN 161	Personal Finance	
or MKT 220	Basic Marketing Concepts	
~~AGSY 371 & AGSY 372~~	~~Agricultural Mechanics and Agricultural Mechanics Laboratory~~	~~3~~
MFGE 120	Basic Electricity	3
CS 180	Computer Science I	4
EE 180	Digital Circuits	3
MFGE 205	CADD for Manufacturing	3
MFGE 217	Industrial Materials	3
MFGE 227	Introduction to Manufacturing Methods	3
MFGE 271	Industrial Statistics	3
MFGE 328	Robotics and Machine Vision	3
MFGE 342	Manufacturing Operations	3
MFGE 343	Automated Systems	3
MFGE 370	Computer Numerical Control	3
MFGE 490A	Senior Research for Manufacturing Engineering Technology	3
SEAS 398	Internship I	1
MFGE 237: Statics for Mechatronics		
Total Hours		41
Management Core		
MFGE 310	Safety in Industry	3

MFGE 355	System Design	3
MFGE 365	Systems Operation	3
MFGE 371	Quality Assurance	3
MFGE 390	Project Management	3
MFGE 394	Lean	3
MFGE 396	Introduction to Supply Chain Management	3
MFGE 430	Technology Management / Supervision / Team Building	3
Select one Communications Elective:		3
COMM 345	Advanced Presentational Speaking	
or COMM 330	Leadership Communication	
or COMM 346	Persuasion	
or COMM 348	Interpersonal Communication	
or COMM 349	Small Group Communication	
or COMM 362	Organizational Communication	
or MGT 261	Course MGT 261 Not Found	
Select one Business Law Elective:		3
~~MGT 301~~	~~Business Law~~	
~~or MGT 333~~	~~Management of Nonprofit Organizations~~	
Total Hours		30
Additional Program Requirements:		
Select one of the following Chemistry sequences:		4-5
CHEM 105 & CHEM 106	Fundamentals of General Chemistry and Fundamentals of General Chemistry Laboratory	
OR		
CHEM 120 & CHEM 121	College Chemistry I and College Chemistry I Laboratory	
MATH 117	Trigonometry (or higher)	3
~~PHYS 231~~ ~~& PHYS 232~~	~~Introduction to Physics and Biophysics I~~ ~~and Laboratory for Physics and Biophysics I~~	~~4~~
Total Hours		7-8

†

Please consult with your advisor regarding courses within your major that can overlap with Colonnade Program requirements (such as CHEM 105/106 and CHEM 120/121 [E-NS/SL], COMM 349 [K-SY], ECON 202 and 203 [E-SB], and FIN 161 [E-SB]).

4-Year Plan

Finish in Four Plan

First Year

Fall	Hours	Spring	Hours
CHEM 105 & CHEM 106	4	COMM 145	3
ENG 100	3	CS 180	4
MATH 117	3	HIST 101 or HIST 102	3
MFGE 120	3	MFGE 217	3
MFGE 205	3	MFGE 271	3
		~~Finance Elective~~	~~3~~
	16		16

Second Year

Fall	Hours	Spring	Hours
MFGE 227	3	ENG 200	3
MFGE 237: Statics for Mechatronics	3	~~MFGE 342~~	~~3~~
MFGE 371	3	~~MGT 301 or MGT 333~~	~~3~~
~~PHYS 231 & PHYS 232~~	~~4~~	EE 180	3
Colonnade - Social & Behavioral Sciences	3	MFGE 310	3
General Elective	3	Colonnade - Arts & Humanities	3
		General Elective	3
	15		15

Third Year

Fall	Hours	Spring	Hours
~~AGSY 371 & AGSY 372~~	~~3~~	~~MFGE 310~~	~~3~~
MFGE 328	3	MFGE 343	3
MFGE 355	3	MFGE 365	3
Communications Elective	3	MFGE 370	3
Connections - Social and Cultural	3	MFGE 390	3
Finance Elective	3	Connections - Local to Global	3
	15		15

Fourth Year

Fall	Hours	Spring	Hours
ENG 300	3	~~MFGE 365~~	~~3~~
MFGE 396	3	MFGE 342	3
MFGE 430	3	MFGE 394	3
SEAS 398	1	MFGE 490A	3
Connections - Systems	3	General Elective	3
		General Elective	3
	13		15

Total Hours 120

Will this program be managed or owned by more than one department?

No

Does this program include courses from outside your department?

Yes

Outside Courses
Details

Who approved including these courses?	When were they approved?
Accounting course change, Stacy R. Bibelhauser	1/15/2025
All others	Previous revisions or program creation

Learning Outcomes

	List all student learning outcomes of the program.
SLO 1	Technical Systems Integration: Apply knowledge of mathematics, science, and applied engineering to specify, install, and maintain integrated manufacturing systems. ~~1. Graduates will possess/ demonstrate the ability to identify, formulate strategies and solve technical problems.~~
SLO 2	Professional Communication: Demonstrate effective oral and written communication skills in technical environments, including the development of technical reports, project proposals, and instructional documentation. ~~2. Graduates will demonstrate an ability to communicate effectively.~~
SLO 3	Project Management & Leadership: Apply management principles to lead teams in the planning, execution, and supervision of technical projects within a manufacturing context. ~~3. Graduates will demonstrate the knowledge and capacity to apply managerial/leadership principles and practices to appropriate situations.~~

Assessment Template: https://www.wku.edu/academicaffairs/ee/assurance_learning_resources.php

Current Assessment Plan

Current Curriculum (or Skills) Map

Delivery Mode

Is 25% or more of this program offered at a location other than main campus?

No

Enter Location(s) and Percentage of Program Offered at Location(s)

Is 50% or more of this program offered by distance education (online asynchronous, online synchronous, connected classrooms, etc.)?

No

Do you plan to offer 100% of this program online?

No

If no, enter the percentage of the program that will be taught online.

12

Do you plan to offer 100% of this program face-to-face?

Yes

Do you plan to offer at least 25% of this program as a direct assessment competency-based educational program?

No

Are there any in-person on-campus requirements?

Does this program have experiential learning (practicum/internship/clinical)?

Does this program lead to professional licensure (excluding teaching certification)?

Library Resources

Click here https://www.wku.edu/library/services/access/faculty/resourcesform.php for link to the Library Resources Form.

Did you complete the Library Resource Form?

Rationale

Rationale for the program proposal?

Delete wording of PLTW Credit option- (Approved by Program 4/3/2026): (Catalog Description):
Over the past several years the process outlined for student to receive Project Lead The Way (PLTW) credit directly from the organization has became obsolete. The clearinghouse is not able to be reached for PLTW therefore students cannot get their transcripts to send to the University. This process has been adjusted such that students going through the PLTW Curriculum at the High school may obtain credit through the local community college and this transcript is evaluated once the student gets to WKU by program faculty. The end result of credit for the technical courses is still met, but this process is not the same.

Reason – all PLTW credit now comes in from KCTCS and is evaluated once it gets to WKU by Program advisors

Removing AGSY 371/ 372 -(Approved by Program 4/3/2026) - Agricultural Mechanics/ Lab; Course Description – The major focus of this course will be metal work, welding and basic metallurgy./ A laboratory course correlated with AGSY 371.
Rational for removal:
Justification- This course is a very technical course by its nature of learning welding methods, which does not directly fit into any of the program learning outcomes for the MET Program. As indicated by our Industrial Advisory board the students coming through the MET program, even if they work for a company that does welding of metal, are not going to be the people completing the welding, they will be the supervisors of those who are doing the welding. As such a topical understanding of what types of welding are available was suggested as being incorporated into other coursework. The introduction of the topics is already happening in two other courses in the program (MFGE 227 and MFGE 342) thus a full semester course is not needed.

Remove MGT 301- (Approved by Program 4/3/2026)- Business Law;
Course Description- A basic course in commercial law covering contracts, property, creditor rights, torts and other bases for liability and the Uniform Commercial Code.
Rational for removal:
Justification- The students who are going into industry are less likely to be dealing with commercial law topics as the industry becomes more complex. Specialized training In law is needed to understand contracts, property, creditor rights, torts and other bases for liability and the Uniform Commercial Code therefor our industrial advisory board has suggested that we remove this course as it does not add the real understanding that students will need and the companies all have attorneys on retainer in case there is an issue.

Create and add – MFGE 237 Statics for Mechatronics – (Prerequisite Math 117 with C or Better)
Description: Forces and the effects of forces acting on bodies at rest, vector addition applied to the study of forces on a body in 3 dimensions.
Justification – Need for students to be able to see where forces are introduced into equipment within a manufacturing setting.

Remove PHYS 231/232- (Approved by Program 4/3/2026) - Introduction to Physics and Biophysics I and Laboratory for Physics and Biophysics I;
Course Description- The first half of a basic course for students of the life sciences, covering the

topics of mechanics, heat and thermodynamics, properties of matter, waves and sound. Emphasis is on an understanding of the physical principles operative in biological systems and on the application of physical methods in biology and medicine. Note: High School algebra, geometry and right triangle trigonometry required. Colonnade/Statewide General Education Code E-NS | NS
Rational for removal:
Justification- The current PHYS 231/232 sequence provides a broad introduction to physics and biophysics, including topics that are not directly aligned with the technical and applied learning outcomes of the MET program. As the program curriculum is being revised to provide students with more discipline-specific knowledge and skills relevant to mechatronics and manufacturing technology, the existing physics sequence does not provide the most direct preparation for the mechanical analysis and problem-solving skills required by MET students.
The introduction of MFGE 237, Statics for Mechatronics will provide a more focused and applied treatment of mechanics concepts directly relevant to mechatronics, manufacturing, and industrial systems. The course will emphasize topics such as forces, moments, equilibrium, free-body diagrams, and mechanical analysis in the context of systems and applications encountered by MET students.

Remove SEAS 401 as an alternative to SEAS 398 (Approved by Program 4/3/2026)- Contemporary issues in Architecture and Manufacturing;
Justification- We are going to be using the SEAS 398 as an instrument to collect data on one of the Program Student Learning Outcomes (SLO) so we want to assure that all the MET students complete the SEAS 398 course.

Add EE 180 (Approved by Program 4/10/2026)– Justification - As an introductory course in digital circuit fundamentals this course will be an essential skill for students in the digital age of Manufacturing. This course will also provide a more secure foundation for students in the Mechatronics program from the understanding of Programmable Logic Controllers (PLC) as well as robotics feedback loops.

Add CS 180 (Approved by Program 4/3/2026) – Justification- As the world gathers more information, programming is becoming a driving force in the acquisition of the correct data. Industry has indicated a greater need for student managers to be able to be “crossovers” where they understand the supervision of people as well as the “supervision” of automated equipment. This course will add a foundational skill to assist students in their subsequent coursework where networking industrial equipment will become the norm and not the exception. This is a step in the direction of going from preventative maintenance to predictive maintenance (data collection) and analysis.

Change Student Learning Outcomes (SLO) to: (Approved by Program 4/10/2026)
• SLO 1: Technical Systems Integration: Apply knowledge of mathematics, science, and applied engineering to specify, install, and maintain integrated manufacturing systems.
• SLO 2: Professional Communication: Demonstrate effective oral and written communication skills in technical environments, including the development of technical reports, project proposals, and instructional documentation.
• SLO 3: Project Management & Leadership: Apply management principles to lead teams in the planning, execution, and supervision of technical projects within a manufacturing context.

Change Measurement of SLO 2 Professional Communication: Demonstrate effective oral and written communication skills in technical environments, including the development of technical reports, project proposals, and instructional documentation. (Approved by Program (4/10/2026)
- Current method of measurement- Lab reports of MFGE 217: Industrial Materials class. The written and graphical presentation competencies were evaluated from the lab reports of the MFGE 217 Industrial Materials class. Issues with this include the course is at a first or second year level, the lab reports are not measuring the verbal capabilities since there are not any oral presentations in the courses and the students work in groups to produce the lab reports thus not identifying any specific students' abilities.
Proposed method: Information from the SEAS 398 (Student Internship) supervisor evaluation of Student Progress form. The questions considered would be specifically 1) Communication skills: Verbal, 2) Communication Skills: Verbal, 3)Relationship with Clients, and 4) Relationship with Co-Workers will allow the program to better evaluate the ability students have to communicate by an outside entity. The students must have the supervisor of the internship complete an evaluation of the students' performance on many topics related to communication specifically including written and verbal communication, relationship with clients, relationship with co-workers. This also aligns more readily with the Kentucky CPE Skills map essential skills.
Senior Research MFGE 490 Evaluation Rubric: The program faculty developed a rubric that was used in the assessment of the students Final Capstone Presentation. The responses for the following categories would be used to evaluate SLO 2: Oral Communication, Written Communication, Graphic Communication, Organization of their Presentation.

Change Measurement of SLO 3- Project Management & Leadership: Apply management principles to lead teams in the planning, execution, and supervision of technical projects within a manufacturing context. (Approved by Program (4/10/2026)
Current method of measurement - The graduates from the MET program are required to take the Certified Manufacturing Specialist (CMS) exam offered by the Association of Technology, Management, and Applied Engineering (ATMAE) before their final graduation. The ATMAE is the accreditation board of the MET program. The ATMAE's CMS Exam required the students to answer areas about the program's core courses. The following question categories of the ATMAE's CMS exam were used to evaluate SLO3: Production Planning (3 areas), Quality (4 areas), and Supervision/Management (3 areas)
I addition to Current method Proposed addition of: Information from the SEAS 398 (Student Internship) supervisor evaluation of Student Progress form. The questions considered would be specifically 1) Attendance and Punctuality, 2) Time Management, 3) Project Management Skills, 4) Reaction to being Supervised, 5) Ability to Plan work or Projects, 6) Honesty, 7) fairness, 8), Trustworthiness. These methods will allow the program to better evaluate the ability students in supervisory tasks/ skills by an outside entity. The students must have the supervisor of the internship complete an evaluation of the students' performance on many topics related to project management and leadership This also aligns more readily with the Kentucky CPE Skills map essential skills.

Additional
Attachments

Additional information or attachments

Reviewer Comments

Bryan Reaka (bryan.reaka) (09/21/26 10:09 am): Rollback: E-mail Dr Woosley about removal of the welding class; finish in 4 plan

Key: 269

Program Change Request

New Program Proposal

Date Submitted: 10/23/26 10:04 am

Viewing: : Smart Manufacturing

Last edit: 10/23/26 12:36 pm

Changes proposed by: grg81142

Proposed Action

In Workflow

1. **EAS Approval**
2. **SC Dean**
3. SC Curriculum Committee
4. Undergraduate Curriculum Committee
5. University Senate
6. Provost
7. Board of Regents
8. Program Inventory

Approval Path

1. 10/23/26 10:00 am Bryan Reaka (bryan.reaka): Rollback to Initiator
2. 10/23/26 10:06 am Bryan Reaka (bryan.reaka): Approved for EAS Approval

Active

Contact Person

Name	Email	Phone
Michael	jeffrey.galloway@wku.edu	2707452859

Term of Implementation	2027-2028
Academic Level	Undergraduate
Program Type	Certificate - Undergraduate
Department	Engineering & Applied Sciences, School of
College	Science and Engineering
Program Name (eg. Biology)	Smart Manufacturing

Will this program have concentrations?
No

CIP Code	15.0407 - Mechatronics, Robotics, and Automation Engineering Technology/Technician.
Will this program lead to teacher certification?	No

Does the proposed program contain 25% or more new content not previously taught in another course at WKU? If yes, contact the Office of the Provost for additional SACSCOC proposal requirements

No

Catalog Content

Program Overview (Catalog field: Overview tab)

The SMART Industries program creates a bridge between traditional manufacturing hardware and modern digital innovation. As the manufacturing industry transitions to Industry 4.0, there is a critical need for professionals who understand not just the mechanics of automation, but the data networks and software that drive them.
This interdisciplinary curriculum fuses the hands-on principles of **Mechatronics Engineering Technology**, the analytical power of **Computer Science**, and the circuitry fundamentals of **Electrical Engineering**. Students will move beyond isolated systems to design, deploy, and manage interconnected industrial environments—often referred to as the Industrial Internet of Things (IIoT).
Through a sequence of applied coursework, students gain proficiency in robotics, machine vision, and automated systems while simultaneously mastering software development, Linux environments, and digital circuitry. The program culminates in specialized IIoT training, where students learn to acquire, fuse, model, and analyze data to optimize manufacturing operations.

Curriculum Requirements (Catalog field: Program Requirements)

MFGE 120	Basic Electricity	3-3.5
or EE 210	Circuits & Networks I	
CS 180	Computer Science I	4
CS 290	Computer Science II	4
CS 315	System Administration	3
MFGE 343	Automated Systems	3
SMRT 300	Course SMRT 300 Not Found	3
SMRT 325	Course SMRT 325 Not Found	3
SMRT 350	Course SMRT 350 Not Found	3
SMRT 490	Course SMRT 490 Not Found	3
or MFGE 490	Course MFGE 490 Not Found	

or CS 496	CS Senior Project and Professional Practice
or ENGR 491	Senior Project II

Will this program be managed or owned by more than one department?

No

Does this program include courses from outside your department?

No

Relation to Mission and Strategic Plan

Explain how the proposed program relates to the institutional mission and academic strategic plan.

1. Alignment with "Our Community and Beyond"

Strategic Goal: A Regional Lighthouse / Economic Engine The Strategic Plan explicitly states WKU must serve as an "economic engine" and build a "talent pipeline that will fuel the future workforce for the commonwealth."

Program Connection: The Smart Industries certificate answers the specific need for "Industry 4.0" talent. By training students to bridge the OT/IT gap (SLO 1), the program directly strengthens the regional manufacturing base (a primary economic driver in Kentucky).

Mission Alignment: This fulfills the Mission's commitment to "contribute to the identification and solution of key social, economic... problems" and supporting "economic well-being of Kentuckians."

2. Alignment with "Our Hill"

Strategic Goal: Applied Research & Innovation The plan emphasizes WKU's niche as an "applied research university, putting ideas into action and demonstrating the link between theory and practice." It also highlights the "WKU Innovation Campus."

Program Connection: The assessment plan for this program focuses on direct application—creating prototypes, fusing real sensor data, and predictive modeling (SLO 3). This moves beyond theoretical engineering into the "applied" space the plan demands.

Innovation: The curriculum's focus on "Innovating Responsibly" (SLO 4) regarding cybersecurity and connected systems supports the strategic goal to "incubate faculty, staff, and student ideas" within the Innovation Campus ecosystem.

3. Alignment with "Our Students"

Strategic Goal: Preparation for the Global Stage / Work-Readiness The plan mandates that students graduate "work-ready" and participate in "high-impact practices."

Program Connection: The "Data Lifecycle" curriculum structure ensures students possess high-demand, modern skills (Cloud computing, IIoT, Data Fusion).

High-Impact Practices: The Capstone project (designing a connected system) and the Cybersecurity Audit are exactly the type of "high-impact practices" and "collaborative learning" the plan advocates for under the "Culture of Innovation" strategy.

4. Alignment with Core Values

The WKU Core Values emphasize a "commitment to contributing to improved quality of life and economic well-being."

Program Connection: By producing graduates who can "Design Connected Systems" (SLO 2) that improve manufacturing efficiency, the program supports the sustainability and profitability of local

industries, which in turn supports the economic health of the community.

Explain how the proposed program addresses the state's postsecondary education strategic agenda

1. Priority: TALENT

CPE Objective: Improve postsecondary education's responsiveness to and alignment with current and projected workforce demands.

Program Alignment: The CPE specifically identifies "STEM fields" and "high-demand areas" as critical priorities. By designing the curriculum around the "OT/IT Gap" (SLO 1), this program directly responds to the manufacturing sector's urgent need for workers who can manage the transition to Industry 4.0.

Workforce Relevance: The program's focus on "Designing Connected Systems" (SLO 2) and "Analyzing Industrial Data" (SLO 3) ensures graduates are not just generally educated, but specifically trained for the 90,000–100,000 job openings the Kentucky Chamber of Commerce estimates exist in the state, many of which require advanced technical skills.

2. Priority: SUCCESS

CPE Objective: Ensure academic offerings are high-quality, relevant, and inclusive.

Program Alignment: The assessment plan you outlined (using direct measures like Prototyping in Capstone and Predictive Maintenance Reports in SM 350) ensures high-quality academic rigor.

Relevance: The shift away from purely theoretical coursework to applied "Data Lifecycle" management ensures the degree remains "relevant" to modern industry standards, a key metric for the CPE's success pillar.

3. Priority: VALUE

CPE Objective: Increase the public's belief in the transformative power of postsecondary education.

Program Alignment: This priority tracks "Economic Mobility" and "Institutional Degree Premium" (wages). Because Smart Industries is a high-wage, high-tech field, graduates are likely to earn salaries significantly above the state median. This provides a clear, tangible demonstration of the Return on Investment (ROI) for a WKU degree, directly supporting the CPE's goal to prove the value of higher education.

Program Quality and Demand

Provide justification and evidence to support the need and demand for this proposed program. Include any data on student demand; career opportunities at the regional, state, and national level; and any changes or trends in the discipline that necessitate a new program.

Learning Outcomes

	List all student learning outcomes of the program.
SLO 1	Bridge the OT/IT Gap: Seamlessly integrate Operational Technology (robotics, PLCs, sensors) with Information Technology (cloud computing, data analytics, networking).
SLO 2	Design Connected Systems: Develop and maintain automated manufacturing systems that communicate real-time data for predictive maintenance and efficiency.
SLO 3	Analyze Industrial Data: Utilize advanced data modeling and fusion techniques to translate raw sensor data into actionable business intelligence.
SLO 4	Innovate Responsibly: Apply engineering best practices to secure and optimize the cyber-physical systems driving modern smart factories.

Assessment Template: https://www.wku.edu/academicaffairs/ee/assurance_learning_resources.php

Current Assessment Plan: 2025-26-asl-SMRT.docx

Current Curriculum (or Skills) Map: SMART_Industry_BS_skills_mapping.xlsx

Change in Discipline (If the program is being proposed to meet changes in the academic discipline, please outline those changes and explain why they necessitate development of a new program.)

Specify any distinctive qualities of the program.

This certificate unites IT and OT by reducing disconnections between shop-floor Operational Technology (robotics, PLCs, automated systems) and enterprise Information Technology (networking, cloud computing, data analytics) to prepare students directly for Industry 4.0 environments.
The certificate combines foundational coursework across Mechatronics Engineering Technology, Computer Science, and Electrical Engineering into a unified, applied program. Once the foundational coursework is complete, students progress through specific 4IR related SMRT courses.
Another distinctive quality is the comprehensive data lifecycle framework approach. This approach structures technical training around how industrial data is generated (sensors, vision systems, circuits), transported (Linux environments, IIoT networks, Data storage/retrieval), and utilized (data fusion, predictive maintenance modeling, digital twins).
A Dedicated IIoT Core Sequence is used. This sequence includes Smart Industries courses (SMRT) targeting emerging Industry 4.0 competencies such as connected cyber-physical systems, secure network configuration, and data-driven operational optimization.
The certificate implements an applied, project-driven assessment. It highlights high-impact, hands-on learning through connected systems design, predictive maintenance analysis, industrial practices, and capstone prototyping rather than purely theoretical instruction.

Does the proposed program differ from existing programs in terms of curriculum, focus, objectives, etc.?
Yes

Please explain
This is program that is a collaboration between the three programs, but none of the individual programs provide all of the essential skills that this program will provide.

Does the proposed program serve a different student population (i.e., students in a different geographic area, non-traditional students) from existing programs?

No

Is access to existing programs limited?

No

Describe how the proposed program will articulate with related programs in the state. It should describe the extent to which students transfer has been explored and coordinated with other institutions.

No other programs within the state offer the upper level SMRT courses. All institutions will offer similar courses to the lower level courses.

Describe student demand data for this program.

Student demand for a Smart Industries certificate is driven by the rapid convergence of Information Technology (IT) and Operational Technology (OT) in modern manufacturing. While traditional degrees provide deep disciplinary foundations, students increasingly seek interdisciplinary credentials to stand out in high-growth regional sectors like automotive, EV manufacturing, and industrial automation.

Computer Science students want to apply software, AI, and data analytics to physical machinery and shop-floor environments.

Electrical Engineering students seek specialized training in industrial automation, robotics, and networked control systems.

Mechatronics Engineering Technology students need validated digital literacy in smart factory systems to future-proof their careers.

By bridging these disciplines, the certificate empowers WKU graduates to enter the workforce as high-demand "hybrid" professionals equipped for Industry 4.0.

Describe workforce needs and career outcomes for graduates of this program.

High-Demand Regional Need: Kentucky and the surrounding manufacturing corridor face an urgent push toward digital transformation (Industry 4.0). Employers urgently need "hybrid" graduates who understand both the physical systems of a plant and the digital information infrastructure driving them.

Competitive Compensation: Graduates stepping into modern manufacturing technology and automation roles command strong economic value, with post-bachelor median wages in the field starting around $76,500 in Kentucky and scaling past $97,600 for advanced degree holders.

Targeted Career Pathways: The certificate prepares CS, EE, and MET students to directly enter high-growth technical roles such as:

Controls & Automation Engineers: Designing, programming, and maintaining smart factory hardware and industrial logic systems.

Industrial Software & IoT Developers: Integrating shop-floor equipment with cloud architectures, edge computing, and data pipelines.

Systems & Manufacturing Technologists: Solving complex production problems, managing automated lines, and overseeing smart manufacturing infrastructure.

Will this program replace or enhance any existing program(s) or concentration(s) within an existing program?

No

Program Demand Data and Support Documents	WKU_15_0406__state.pdf WKU_15_0613__state.pdf WKU_15_0613__region.pdf WKU_15_406__region.pdf

Delivery Mode

Is 25% or more of this program offered at a location other than main campus?

No

Enter Location(s) and Percentage of Program Offered at Location(s)

Is 50% or more of this program offered by distance education (online asynchronous, online synchronous, connected classrooms, etc.)?

No

Do you plan to offer 100% of this program online?

No

If no, enter the percentage of the program that will be taught online.

0

Do you plan to offer 100% of this program face-to-face?

Yes

Do you plan to offer at least 25% of this program as a direct assessment competency-based educational program?

No

Are there any in-person on-campus requirements?

Yes

If YES, please explain:

All courses are face-to-face on campus.

Does this program have experiential learning (practicum/internship/clinical)?

No

Does this program lead to professional licensure (excluding teaching certification)?

No

Rationale

Rationale for the program proposal?

1. Addressing the Convergence of IT and OT (Industry 4.0)

The manufacturing sector is currently undergoing its fourth major revolution (Industry 4.0), characterized by the integration of cyber-physical systems. Historically, Operational Technology (OT)—the machines, robots, and PLCs on the shop floor—existed separately from Information Technology (IT)—the servers, databases, and networks.

However, the modern "Smart Factory" relies on the seamless convergence of these two domains. The proposed SMART Industries certificate is developed specifically to bridge this gap. While traditional engineering programs focus on either the hardware (EE/MFGE) or the software (CS), this program produces a hybrid professional capable of designing the machine, networking it to the cloud, and analyzing the data stream it produces.

2. Closing the Specific IIoT Skills Gap

Industry feedback consistently highlights a critical skills gap in the deployment of the Industrial Internet of Things (IIoT).

• The Problem: Computer Science graduates often lack the physics and electronics knowledge to understand industrial machinery, while Manufacturing Engineering Technology and Electrical Engineering graduates often lack the advanced networking, Linux, and data modeling skills required to manage high-volume sensor data.

• The Solution: By combining MFGE with CS and EE, this curriculum eliminates the "silo" effect. The specific addition of the SM (Smart Manufacturing) course sequence ensures graduates can not only install a sensor but also configure the network (SMRT 300), fuse the data (SMRT 325), and model the results for predictive maintenance (SMRT 350).

3. Alignment with High-Growth Labor Market Trends

The demand for professionals with IIoT expertise is outpacing supply.

• Market Growth: The global IIoT market is projected to grow exponentially, driven by the need for predictive maintenance, energy optimization, and supply chain visibility.

• Job Roles: The program targets emerging job titles that did not exist ten years ago, such as Digital Twin Engineer, IIoT Architect, Industrial Data Scientist, and Connected Systems Specialist.

• CIP Code Relevance (15.0407): The selection of CIP code 15.0407 (Mechatronics, Robotics, and Automation Engineering Technology) prioritizes practical and hands-on while expanding the definition of "Automation" to include the necessary software layer.

4. Curriculum Design Strategy: The Data Lifecycle Approach

• Generation (MFGE/EE): Students learn how data is generated via robotics, vision systems, and digital circuits.

• Transportation (CS/SMRT): Students learn how to move that data securely using Linux environments and IIoT Network protocols (SMRT 300).

• Utilization (SMRT): Students learn to store (SMRT 325) and analyze (SMRT 350) the data to drive business value.

5. Supporting Economic Competitiveness

As manufacturing reshores to domestic markets, the primary competitive advantage is no longer low labor costs, but high technological efficiency. Manufacturers cannot achieve this efficiency without a workforce fluent in the language of Smart Manufacturing. This program directly supports regional and national economic development by supplying the talent required to modernize the industrial base.

I agree that our program's primary purpose is educational and scholarly and abides by institutional, state, and federal policies.

Yes

Additional Attachments

Additional information or attachments

Reviewer Comments

Bryan Reaka (bryan.reaka) (10/23/26 10:00 am): Rollback: Change to Smart Industies

Key: 437