

**MEMORANDUM TO:** Ogden College of Science and Engineering Curriculum Committee

Dr. Melanie Autin  
Dr. Nahid Gani  
Dr. Scott Grubbs  
Dr. Ting-Hui Lee  
Dr. Jeremy Maddox

Dr. Andy Mienaltowski  
Dr. Les Pesterfield  
Dr. Todd Willian  
Mr. Jason Wilson

**FROM:** Dr. Stuart Burris, Chair

**SUBJECT:** Agenda for Thursday, March 2, 2023

**A. OLD BUSINESS:**

- I. Consideration of the minutes of the February 2, 2023 meeting.

**B. NEW BUSINESS:**

<b>Type of item</b>	<b>Description of Item &amp; Contact Information</b>
Informational Proposals not attached.	<p><b><u>The following items were sent through the expedited process:</u></b></p> <p><b>Proposal to Add or Revise Course Student Learning Outcomes Only</b> GEOG 175, 210, 328, 344, 352, 360, 391, 425, 430, 459, 465, 471, 480, 499. GEOL 106, 107, 270, 310, 311, 325, 380, 399, 408, 415, 445, 465, 475, 499. GISC 414, 417, 419. EMDS 400, 401, 402, 403, 404.</p> <p><b>Proposal to Add or Revise Student Learning Outcomes Only for Colonnade Courses</b> GEOG 110, 200, 226, 227, 280, 330, 378, 380, 386, 452. GEOL 250, 315. GISC 216.</p> <p><b>Proposal to Add or Revise Student Learning Outcomes and In-unit Pre-req Changes</b> GEOG 364, 427, 455, 461, 492. GEOL 430, 455, 485, 490. GISC 443, 477. GEOG 300. MATH 117, 205, 302, 304, 403, 411. ME 310.</p> <p><b>Proposal to Add or Revise Student Learning Outcomes and Schedule Type Changes</b> GEOL 330, 360.</p> <p><b>Proposal to Delete a Course</b> GEOG 196, 198, 462. 467. MA 117C</p> <p><b>Proposal to Suspend a Course</b> AGEC 460, AGRI 469</p> <p><b>Proposal to Add or Revise Program Learning Outcomes Only</b> Ref. 174, Geographic Information Systems Certificate Ref. 5009, Environmental, Sustainability, and Geographic Studies Ref. 578, Meteorology Ref. 178 EMDS Cert.</p>
Action	<p><b>Proposal to Break Course Equivalency &amp; Delete</b> GEOG 434</p>

	GEOG 466 GEOL 295
Action	<b>Proposal to Create a New Course</b> EE 447, Analog IC Design, 3 hrs. EE 448, Analog IC Design Laboratory, 1 hr. EE 499, EE Special Topics, 3 hrs.
Action	<b>Proposal to Make Multiple Revisions to a Course, GEOG LL</b> GEOG/GEOL 103 GEOG 225 GEOG 275 GEOG 295
Action	<b>Proposal to Make Multiple Revisions to a Course, GEOG UL</b> GEOG 474 GEOG 475 GEOG 486 GEOG 487 GEOG 495
Action	<b>Proposal to Make Multiple Revisions to a Course, GEOL LL</b> GEOL 111 GEOL 112 GEOL 113 GEOL 114
Action	<b>Proposal to Make Multiple Revisions to a Course, GEOL UL</b> GEOL 305 GEOL 405 GEOL 420 GEOL 432 GEOL 440 GEOL 470
Action	<b>Proposal to Make Multiple Revisions to a Course, GISC</b> GISC 316 GISC 317 GISC 418 GISC 423
Action	<b>Proposal to Make Multiple Revisions to a Course, ME</b> ME 220 ME 240 ME 325 ME 330 ME 332
Action	<b>Proposal to Revise a Program</b> Ref. 534P/534, Mechanical Engineering, 60.5 hrs
Action	<b>Proposal to Revise a Program</b> Ref. 728P/728, Mathematics, Bachelor of Arts, 36-39 hrs.

### C. OTHER BUSINESS

**Members Present:**

Dr. Melanie Autin  
Dr. Royhan Gani for Dr. Nahid Gani  
Dr. Phil Lienesch for Dr. Scott Grubbs  
Dr. Ting-Hui Lee  
Dr. Matt Nee for Dr. Jeremy Maddox  
Dr. Andy Mienaltowski  
Dr. Les Pesterfield  
Dr. Todd Willian  
Mr. Jason Wilson

Guests: Dr. Matthew Shake and Dr. Greg Goodrich

**FROM:** Dr. Stuart Burris, Chair

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

**OLD BUSINESS:**

Minutes from the January 2023 meeting required no corrections and were approved as posted.  
Ref. 747/747E PSYS (substitute proposal), Willian/Wilson, no discussion, vote unanimous

**NEW BUSINESS:**

**Action Agenda**

508 AGRI, Autin/Wilson, no discussion, vote unanimous  
METR 322, Autin/Willian, no discussion, vote unanimous  
5008 GEOL, Autin/Wilson, no discussion, vote unanimous  
5006 MET, Wilson/Autin, no discussion, vote unanimous

**Other Business:**

Information item expected at next UCC regarding the addition of course learning outcomes in CourseLeaf; it is expected these will go through Expedited route (and can be coupled with any other single Expedited change)

Adjourned at 4:25

# Course Change Request

Date Submitted: 02/09/23 8:55 am

## Viewing: **GEOG 434 : Historic Preservation Planning**

Also listed as: **FLK 434**

Formerly known as: **FLK 434**

Last revision: 02/09/23 8:55 am

Changes proposed by: amy83008

### 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. 02/10/23 12:48 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Catalog Pages  
referencing this  
course

**FLK 434:**  
[Department of Earth, Environmental, and Atmospheric Sciences](#)

#### Proposed Action

Active

#### Contact(s)

Name	E-mail	Phone
<a href="#">Amy Nemon</a>	<a href="mailto:amy.nemon@wku.edu">amy.nemon@wku.edu</a>	<a href="tel:270-745-3082">270-745-3082</a>

Review Type **Full Review**

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GEOG - Geography Course number 434

Department Geography & Geology

College Science and Engineering

Course title  
Historic Preservation Planning

Abbreviated course title HIST PRESERVE/PLANNING



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Course description

An overview of historic preservation methods and practice. The course will include an overview of the historic preservation movement in the United States and an examination of preservation law and methodology. A field project is required.

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                        450701 - Geography.

Does this course have prerequisites

No

Corequisites

Equivalent Courses

~~FLK 434~~

Department

~~Folk Studies & Anthropology~~

College

~~Arts & Letters~~

**Restrictions:**

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College restriction?            No

Field of study  
restriction/major?            No

Classification  
restriction?                    No

Departmental

Restrictions

Reason for changing the course

We have decided to delete GEOG 434 as this course has not been in rotation for a very long time. This course is currently a equivalent to FLK 434 and we must break the equivalency before deleting the GEOG 434. Please mark this class for deletion as well.

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.

Darlene Applegate in Folklore was contacted by the department chair Leslie North.

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
<u>1</u>	<u>Deleting course</u>

Content outline

#	Topic
<u>1</u>	<u>Deleting course</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

# Course Change Request

Date Submitted: 02/09/23 8:57 am

Viewing: **GEOG 466 : Geography of Africa**

Also listed as: **AFAM 466**

Formerly known as: **AFAM 466**

Last revision: 02/09/23 8:57 am

Changes proposed by: amy83008

## In Workflow

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

Catalog Pages referencing this course

**AFAM 466:**  
[African-American Studies \(AFAM\)](#)

## Approval Path

1. 02/10/23 12:50 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Amy Nemon</a>	<a href="mailto:amy.nemon@wku.edu">amy.nemon@wku.edu</a>	<a href="tel:270-745-3082">270-745-3082</a>

Review Type **Full Review**

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GEOG - Geography Course number 466

Department Geography & Geology

College Science and Engineering

Course title  
Geography of Africa

Abbreviated course title AFRICA

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Course description

A geographic survey assessing the relationships of the physical and cultural patterns to actual and potential economic development. Note: Permission of instructor required.

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                        450701 - Geography.

Does this course have prerequisites

No

Corequisites

Equivalent Courses

~~AFAM 466~~

Department

~~History~~

College

~~Arts & Letters~~

**Restrictions:**

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College restriction?            No

Field of study  
restriction/major?            No

Classification  
restriction?                        No

Departmental  
Restrictions

Reason for changing the course

We have decided to delete GEOG 466 as this course has not been in rotation for a very long time. This course is currently a equivalent to AFAM 433 and we must break the equivalency before deleting the GEOG 466. Please mark this class for deletion.

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
<u>1</u>	<u>deleting course</u>

Content outline

#	Topic
<u>1</u>	<u>deleting course</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

# Course Change Request

Date Submitted: 02/10/23 1:43 pm

Viewing: **GEOL 295 : Introduction to Research Methodology**

Also listed as: ~~BIOL 295 / CHEM 295 / CS 295 / ENGR 295 / MATH 295 / PHYS 295~~

Formerly known as: BIOL 295 / CHEM 295 / CS 295 / ENGR 295 / MATH 295 / PHYS 295

Last revision: 02/10/23 1:43 pm

Changes proposed by: ryh84947

## 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. 02/13/23 8:12 am  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Catalog Pages referencing this course

**BIOL 295:**  
[Biology \(BIOL\)](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Nahid Gani</a>	<a href="mailto:nahid.gani@wku.edu">nahid.gani@wku.edu</a>	<a href="tel:270-745-2813">270-745-2813</a>

Review Type

[Full Review](#)

Term for

Fall 2023

implementation

Academic Level

Undergraduate

Course prefix  
(subject area)

GEOL - Geology

Course number 295

Department

Geography & Geology

College

Science and Engineering

Course title



## Introduction to Research Methodology

Abbreviated course title      INTRO RESEARCH METHOD

### Course description

To familiarize Ogden Research Scholars and other research oriented students with the fundamentals of choosing a research topic, performing a bibliographical search on a subject, classification of instruments, data taking, data reduction, professional ethics and other research oriented topics. The common points of research methodology in the different scientific areas will be accentuated. Examples will be drawn from the various disciplines. Use of computers will be emphasized. Course does not count toward any major or minor. Note: Ogden Research Scholar, or 3.2 grade point average at the end of freshman year, or OCSTH faculty member recommendation.

Credit hours                      1

### Repeatable

Yes

Number of repeats              2

For maximum credits              1

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                      400601 - Geology/Earth Science, General.

Does this course have prerequisites

No

### Corequisites

#### Equivalent Courses

~~BIOL-295~~

Department

~~Biology~~

College

~~Science and Engineering~~

~~CHEM-295~~

Department

~~Chemistry~~

College

~~Science and Engineering~~

~~CS-295~~

Department

~~Engineering & Applied Sciences, School of~~

College

~~Science and Engineering~~

~~ENGR 295~~

Department

~~Engineering & Applied Sciences, School of~~

College

~~Science and Engineering~~

~~MATH 295~~

Department

~~Mathematics~~

College

~~Science and Engineering~~

~~PHYS 295~~

Department

~~Physics & Astronomy~~

College

~~Science and Engineering~~

**Restrictions:**

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College restriction? No

Field of study  
restriction/major? No

Classification  
restriction? No

Departmental  
Restrictions

Reason for changing  
the course

We are requesting to break equivalency for this course. After equivalency is broken we request to delete the course, since we already have similar research course GEOL 399. Besides GEOL 295 does not count towards our major but GEOL 399 does. So we only use GEOL 399.

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

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
<u>1</u>	<u>n/a</u>

Content outline

#	Topic
<u>1</u>	<u>n/a</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting

documentation

Reviewer Comments

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Key: 4228

# Course Change Request

## New Course Proposal

Date Submitted: 02/17/23 3:08 pm

Viewing: **EE 447 : Analog IC Design**

Also listed as: **EE TBD**

Last revision: 02/17/23 3:08 pm

Changes proposed by: mrk43933

### 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. 02/17/23 1:59 pm  
Shahnaz Aly  
(shahnaz.aly):  
Rollback to Initiator
2. 02/20/23 10:44 am  
Shahnaz Aly  
(shahnaz.aly):  
Approved for EAS  
Approval

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
Mark Cambron	mark.cambron@wku.edu	2707458868

Term for implementation      Fall 2023

Academic Level      Undergraduate

Course prefix (subject area)      EE - Electrical Engineering      Course number      447

Department      Engineering & Applied Sciences, School of

College      Science and Engineering

Course title  
Analog IC Design

Abbreviated course title ANALOG IC DESIGN

Course description

Analysis and design of analog integrated circuits. Bipolar, JFET, and MOS-FET devices. The technology of IC fabrication. Transistor connections, current sources, active loads, and output stages. Integrated amplifier and MOS circuit design.

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 144101 - Electromechanical Engineering.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
	(	EE 345	D	UG	)	No
And	(	EE 448			)	Yes

Corequisites

Equivalent Courses

EE TBD Department  
Engineering & Applied Sciences, School of  
College  
Science and Engineering

**Restrictions:**

College restriction? No

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

Departmental Restrictions  
None

Reason for developing the proposed course

Course is being offered from the University Of Louisville. It will increase the options for EE Electives. All EE students are required to take at least 12 hours of EE Electives

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.

Talked with Dr. McIntyre at the University of Louisville. on 2/3/2023

Michael L. McIntyre, Ph.D., P.E.  
Electrical and Computer Engineering (ECE)  
Associate Professor  
Associate Chair of ECE  
Director of Graduate Studies for ECE  
University of Louisville  
Louisville KY, 40292  
502-852-7505

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

How many students

per academic year  
are expected to  
enroll?  
10

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

Offered to our Junior and Senior EE Students. Students must take at least 12 hours from a list of upper level EE Courses.

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	Design and simulate the following integrated components: resistors, capacitors, diodes and MOSFETs and account for bond pad, bond wire and package parasitics.
2	Design vias to account for contact resistance, metal line parasitics, cross talk, ground bounce, TCR and VCR design tolerances.
3	Use computer based tools, such as WinSPICE to simulate analog IC components and circuits.
4	Layout analog integrated circuits using computer based tools, such as Tanner Design Tools.
5	Demonstrate the skills needed to successfully complete a custom analog integrated circuit using a CMOS 0.5um process.
6	Demonstrate effective teamwork skills, oral presentation skills and generate a professional, technical report for the custom IC design project.

Content outline

#	Topic
1	Introduction, Review Goals of Course
2	Introduction to CMOS Design, History, Prolific Designers



#	Topic
3	The N-Channel
4	Metal Layers
5	Active and Poly Layers
6	Resistors, Capacitors and MOSFETs
7	Product Design
8	MOSFET Operation
9	Tanner L-Edit & LVS Tutorials
10	Deign Review

Student

expectations and  
requirements

Exams, Homework, Research Paper

Tentative texts and  
course materials

“CMOS Circuit Design, Layout and Simulation” by Jacob Baker 2019 revised 4th Edition

Laptop capable of running the L-Edit IC design software from Mentor

Special equipment,  
materials, or library  
resources needed

None

Additional  
information

Supporting  
documentation

Reviewer Comments

**Shahnaz Aly (shahnaz.aly) (02/17/23 1:59 pm):** Rollback: friendly amendments

# Course Change Request

## New Course Proposal

Date Submitted: 02/17/23 3:07 pm

### Viewing: **EE 448 : Analog IC Design Laboratory**

Last revision: 02/17/23 3:07 pm

Changes proposed by: mrk43933

#### 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. 02/17/23 1:59 pm  
Shahnaz Aly  
(shahnaz.aly):  
Rollback to Initiator
2. 02/20/23 10:44 am  
Shahnaz Aly  
(shahnaz.aly):  
Approved for EAS Approval

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
Mark Cambron	mark.cambron@wku.edu	2707458868

Term for implementation      Fall 2023

Academic Level      Undergraduate

Course prefix (subject area)      EE - Electrical Engineering      Course number      448

Department      Engineering & Applied Sciences, School of

College      Science and Engineering

Course title  
Analog IC Design Laboratory

Abbreviated course title ANALOG IC DESIGN LABORATORY

Course description

Laboratory to illustrate design principles in ANALOG IC DESIGN

Credit hours 1

Repeatable

No

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Lab

CIP Code 141001 - Electrical and Electronics Engineering.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		EE 447				Yes

Corequisites

Equivalent Courses

**Restrictions:**

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College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

None

Reason for  
developing the  
proposed course

Course is being offered from the University Of Louisville. It will increase the options for EE Electives. All EE students are required to take at least 12 hours of EE Electives

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.

Talked with Dr. McIntyre at the University of Louisville. on 2/3/2023

Michael L. McIntyre, Ph.D., P.E.  
Electrical and Computer Engineering (ECE)  
Associate Professor  
Associate Chair of ECE  
Director of Graduate Studies for ECE  
University of Louisville  
Louisville KY, 40292  
502-852-7505

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

How many students  
per academic year  
are expected to  
enroll?

10

How were these  
projections  
calculated? Explain  
any supporting

evidence/data you have for arriving at these projections:

Offered to our Junor and Senior EE Students. Students must take at least 12 hours from a list of upper level EE Courses.

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	Design and simulate the following integrated components: resistors, capacitors, diodes and MOSFETs and account for bond pad, bond wire and package parasitics.
2	Design vias to account for contact resistance, metal line parasitics, cross talk, ground bounce, TCR and VCR design tolerances.
3	Use computer based tools, such as WinSPICE to simulate analog IC components and circuits covered in CLO#1.
4	Layout analog integrated circuits using computer based tools, such as Tanner Design Tools.
5	Demonstrate the skills needed to successfully complete a custom analog integrated circuit using a CMOS 05um process.
6	Demonstrate effective teamwork skills, oral presentation skills and generate a professional, technical report for the custom IC design project.

#### Content outline

#	Topic
1	Introduction, Review Goals of Course
2	Introduction to CMOS Design, History, Prolific Designers
3	The N-Channel
4	Metal Layers
5	Active and Poly Layers
6	Resistors, Capacitors and MOSFETs
7	Product Design

#	Topic
8	MOSFET Operation
9	Tanner L-Edit & LVS Tutorials
10	Deign Review

Student

expectations and  
requirements

IC Design Project, Design Report, Design Presentation

Tentative texts and  
course materials

“CMOS Circuit Design, Layout and Simulation” by Jacob Baker 2019 revised 4th Edition

Laptop capable of running the L-Edit IC design software from Mentor

Special equipment,  
materials, or library  
resources needed

None

Additional  
information

Supporting  
documentation

Reviewer Comments

**Shahnaz Aly (shahnaz.aly) (02/17/23 1:59 pm):** Rollback: friendly amendments

# Course Change Request

## New Course Proposal

Date Submitted: 02/17/23 3:14 pm

Viewing: **EE 499 : EE Special Topics**

Last revision: 02/17/23 3:14 pm

Changes proposed by: mrk43933

### 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. 02/17/23 1:59 pm  
Shahnaz Aly  
(shahnaz.aly):  
Rollback to Initiator
2. 02/20/23 10:44 am  
Shahnaz Aly  
(shahnaz.aly):  
Approved for EAS  
Approval

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
Mark Cambron	mark.cambron@wku.edu	2707458868

Term for implementation      Fall 2023

Academic Level      Undergraduate

Course prefix (subject area)      EE - Electrical Engineering      Course number      499

Department      Engineering & Applied Sciences, School of

College      Science and Engineering

Course title  
EE Special Topics

Abbreviated course title      EE SPECIAL TOPICS

Course description

Exploration of one or more Electrical Engineering topics not covered in the regular course offerings. Note: Permission of instructor required.

Credit hours                      3

Repeatable

Yes

Number of repeats              1

For maximum credits              6

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                      141001 - Electrical and Electronics Engineering.

Does this course have prerequisites

No

Corequisites

Equivalent Courses

**Restrictions:**

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College restriction?      No

Field of study restriction/major?      No

Classification restriction?      No

Departmental Restrictions  
none

Reason for developing the



proposed course

Special Topics will allow instruction on EE Topics not covered in regular course offerings.

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

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

How many students  
per academic year  
are expected to  
enroll?

10

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

Course will count as an EE Elective. EE Students are required to take atleast 12 hours of EE Electives

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

Are you seeking No

Colonnade approval  
for this course?

Student Learning  
Outcomes

#	Student Learning Outcomes
1	Depends on subject presented.

Content outline

#	Topic
1	Depends on subject presented.

Student  
expectations and  
requirements

Tentative texts and  
course materials

Depends on subject presented.

Special equipment,  
materials, or library  
resources needed  
None

Additional  
information

Supporting  
documentation

Reviewer Comments

**Shahnaz Aly (shahnaz.aly) (02/17/23 1:59 pm):** Rollback: friendly amendments

# Course Change Request

Date Submitted: 02/14/23 6:14 pm

Viewing: **GEOG 103 : Our Dynamic Planet**

Also listed as: **GEOL 103**

Last revision: 02/14/23 6:14 pm

Changes proposed by: amy83008

Catalog Pages  
referencing this  
course

**GEOG 103:**  
[Colonnade Requirements](#)

Proposed Action

Active

## In Workflow

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

## Approval Path

1. 02/09/23 1:30 pm  
Leslie North  
(leslie.north):  
Rollback to Initiator
2. 02/09/23 7:46 pm  
Leslie North  
(leslie.north):  
Rollback to Initiator
3. 02/10/23 12:26 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval
4. 02/14/23 2:29 pm  
Stuart Burris  
(stuart.burris):  
Rollback to Initiator
5. 02/15/23 9:21 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Contact(s)

Name	E-mail	Phone
<a href="#">Amy Nemon</a>	<a href="mailto:amy.nemon@wku.edu">amy.nemon@wku.edu</a>	<a href="tel:270-745-3082">270-745-3082</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GEOG - Geography Course number 103

Department Geography & Geology

College Science and Engineering

Course title  
Our Dynamic Planet

Abbreviated course title OUR DYNAMIC PLANET

Course description

Introduction to ~~the spatial dimension of~~ Earth's dynamic systems and [processes and how their spatial dimensions they affect people and the environment. people. This includes](#) ~~These include~~ the atmosphere, hydrosphere, and [lithosphere, and the interconnectedness of Earth's systems. lithosphere. Students are encouraged to think about the interdisciplinary nature of geoscience from examples emphasized throughout the course.](#)

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 400601 - Geology/Earth Science, General.

Does this course have prerequisites

No

Corequisites

Equivalent Courses

GEOL 103

Department

Geography & Geology

College

Science and Engineering

### Restrictions:

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College restriction? No

Field of study  
restriction/major? No

Classification  
restriction? No

Departmental  
Restrictions

Reason for changing  
the course

Add learning outcomes and Content Outlines. Description expanded to more completely reflect the objectives of the course; there are no changes to the learning outcomes or content delivered in the course, we are only editing the description to reflect existing course objectives.

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 Yes

Colonnade approval  
for this course?

Colonnade Explorations  
Programs

Explorations: Course Natural & Physical Sciences  
Categories

Please provide a brief rationale for why this existing course fits into the Colonnade program that addresses why the proposals is being submitted now.

Add Student Learning Outcomes and Content Outlines. Description expanded to more completely reflect the objectives of the course.

Colonnade Proposal

Syllabus 202310\_prod GEOG103005 202310 47271.pdf

Colonnade Learning  
Outcomes

#	Colonnade Learning Outcomes
<u>1</u>	<u>Demonstrate an understanding of the methods of science inquiry.</u>
<u>2</u>	<u>Explain basic concepts and principles in one or more of the sciences.</u>
<u>3</u>	<u>Apply scientific principles to interpret and make predictions in one or more of the sciences.</u>
<u>4</u>	<u>Explain how scientific principles relate to issues of personal and/or public importance</u>

Student Learning  
Outcomes

#	Student Learning Outcomes
<u>1</u>	<u>• Show an understanding of the scientific method and knowledge of natural science and its relevance in our lives.</u>
<u>2</u>	<u>• Discuss the mechanisms of heat transfer and how they relate to the Earth's energy balance.</u>
<u>3</u>	<u>• Describe how Earth-sun relationships affect the receipt and distribution of solar energy during the year and how these changes produce the seasons.</u>
<u>4</u>	<u>• Outline the major latitudinal pressure systems and wind belts and their influence on the circulation of global winds and ocean currents.</u>
<u>5</u>	<u>• Describe how the role of water vapor and carbon dioxide produce the greenhouse effect and discuss the key scientific issues associated with climate change.</u>
<u>6</u>	<u>• Describe all four types of fronts and the types of weather that occur with their passage.</u>
<u>7</u>	<u>• Explain the differences between weather and climate, and be aware of the factors that make weather forecasting a complex process.</u>

#	Student Learning Outcomes
<u>8</u>	• <u>Classify the major categories of rocks (igneous, sedimentary, and metamorphic) and describe the rock cycle.</u>
<u>9</u>	• <u>Discuss the theory of plate tectonics and provide supporting evidence.</u>
<u>10</u>	• <u>Explain the development of ocean basins and describe major features of continental margins and the ocean floor.</u>
<u>11</u>	• <u>Discuss the importance of the oceans in the Earth system (i.e., aspects of carbon cycling, productivity, and ocean circulation).</u>
<u>12</u>	<u>Associate the different types of faults with the type of tectonic force responsible for them.</u>
<u>13</u>	• <u>Describe the spatial and temporal risk associated with various natural hazards such as hurricanes, tornadoes, earthquakes, and volcanoes.</u>
<u>14</u>	• <u>Explain the principal differences among the various physical and chemical weathering processes.</u>
<u>15</u>	• <u>Recognize some of the landforms and landscape features created by mass wasting.</u>
<u>16</u>	• <u>Distinguish between fluvial, eolian, and glacial processes and recognize some of the landforms and landscape features created by each.</u>
<u>17</u>	• <u>Describe basic groundwater movement and recognize various karst features.</u>

Content outline

#	Topic
<u>1</u>	<u>Physical Geography and Environmental Concepts</u> <u>Maps and GIS</u> <u>Earth-Sun Relationships</u> <u>Rocks and Minerals</u> <u>Plate Tectonics, Earthquakes, Volcanoes, Mass Wasting</u> <u>Karst Processes</u> <u>Fluvial Processes and Landforms</u> <u>Arid, Glacial, and Coastal Processes and Landforms</u> <u>Atmospheric Pressure, Winds, and Circulation</u> <u>Moisture, Condensation, and Precipitation</u> <u>Air Masses &amp; Weather Systems</u> <u>Global Climates and Climate Change</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

**Leslie North (leslie.north) (02/09/23 1:30 pm):** Rollback: Fix flow from Ex to F

**Leslie North (leslie.north) (02/09/23 7:46 pm):** Rollback: workflow

**Stuart Burris (stuart.burris) (02/14/23 2:29 pm):** Rollback: Course LOs are not the same as those in the Colonnade proposal from 2013.



# Course Change Request

Date Submitted: 02/07/23 12:54 pm

## Viewing: **GEOG 225 : Visualizing Geography**

Last approved: 12/14/21 4:28 pm

Last revision: 02/10/23 12:28 pm

Changes proposed by: amy83008

### In Workflow

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

Catalog Pages referencing this course

[Colonnade Requirements](#)  
[Department of Earth, Environmental, and Atmospheric Sciences](#)

### Approval Path

1. 02/07/23 8:12 am  
Leslie North  
(leslie.north):  
Rollback to Initiator
2. 02/10/23 12:28 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Proposed Action

### History

1. Dec 14, 2021 by  
Jessica Dorris  
(jessica.dorris)

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Jason Polk</a>	<a href="mailto:jason.polk@wku.edu">jason.polk@wku.edu</a>	<a href="tel:270-745-5015">270-745-5015</a>

Review Type [Full Review](#)

Term for Fall 2023

implementation

Academic Level Undergraduate

Course prefix GEOG - Geography Course number 225  
(subject area)

Department Geography & Geology

College Science and Engineering

Course title  
Visualizing Geography

Abbreviated course VISUALIZING GEOGRAPHY  
title

Course description

Students will use data visualizations, interactive ~~Visualizing Geography uses photographs, maps,~~ and static maps, digital tools, photographs, and illustrations to explain the diversity of human-environmental interactions influencing society, ~~human societies,~~ political systems, natural resources, and development and population movement across space and and time, from local communities to our increasingly ~~increasingly~~ interconnected world.

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 450701 - Geography.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
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And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		CONE	Y			

Corequisites

Equivalent Courses

**Restrictions:**

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College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for changing the course

Updated SLOs and outline. Changed description to better explain course intent and better demonstrate the disciplines included for Colonnade Systems requirements; there are no changes to the learning outcomes or content delivered in the course, we are only editing the description to better reflect existing course objectives.

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

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

No

Are you seeking Colonnade approval for this course?

Yes

Colonnade Connections  
Programs

Connections: Systems  
Course Categories

Please provide a brief rationale for why this existing course fits into the Colonnade program that addresses why the proposals is being submitted now.

[Add Colonnade Learning Outcomes, Student Learning Outcomes and Content Outlines](#)

Colonnade Proposal

Syllabus [202030\\_prod GEOG225001\\_202030\\_47250.docx](#)

Colonnade Learning Outcomes

#	Colonnade Learning Outcomes
<u>1</u>	<u>Analyze how systems evolve over space and through time.</u>
<u>2</u>	<u>Compare the study of individual cultural components to the analysis of entire global systems.</u>
<u>3</u>	<u>Evaluate how system-level thinking informs decision-making, public policy, and/or the sustainability of the system itself.</u>

Student Learning Outcomes

#	Student Learning Outcomes
1	<u>Analyze and interpret the diversity of the environment and geographical concepts using visual imagery.</u>
<u>2</u>	<u>Understand similarities and differences in human landscape changes through the use of maps and imagery.</u>
<u>3</u>	<u>Compare and identify changes to the human landscape over space and through time from local communities to the global scale.</u>
<u>4</u>	<u>Evaluate how public policies, societal norms, and geoenvironmental decisions influence changes in the human-environment landscape through a detailed analysis of visual imagery.</u>
<u>5</u>	<u>Construct visualizations of environmental, geographical, and sustainability data to communicate learned concepts.</u>

Content outline

#	Topic
1	<u>Types and use of geovisual imagery</u> <u>From local to global scales of impact</u> <u>Patterns of Migration and Population Change</u> <u>From the Village to the Megacity</u> <u>Patterns of Development on the Landscape</u>

#	Topic
	<u>Digital maps and imagery of landscapes</u> <u>Environmental and geographic data visualization</u> <u>Environmental Challenges</u> <u>Creating Visual Imagery</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

**Leslie North (leslie.north) (02/07/23 8:12 am):** Rollback: Please correct Colonnade approval selection.

# Course Change Request

Date Submitted: 02/06/23 10:21 pm

Viewing: **GEOG 275 : Applied Supervised Independent Research in Geography**

Last revision: 02/07/23 8:25 pm

Changes proposed by: jsn15309

Catalog Pages  
referencing this  
course

[Department of Earth, Environmental, and Atmospheric Sciences  
Geography \(GEOG\)](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Jason Polk</a>	<a href="mailto:jason.polk@wku.edu">jason.polk@wku.edu</a>	<a href="tel:270-745-5015">270-745-5015</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GEOG - Geography Course number 275

Department Geography & Geology

College Science and Engineering

Course title [Applied](#) ~~Supervised~~ Independent Research ~~in Geography~~

Abbreviated course title [APPLIED](#) INDEPENDENT RESEARCH ~~IN GEOG~~

## 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. 02/10/23 12:30 pm  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval

Course description

Restricted to freshmen, sophomores, and Gatton Academy students. Supervised research independent study or internship with faculty, research center, lab, government, community, or private sector. May be repeated for A study of a maximum of 6 credit hours. ~~selected problem under the supervision of a faculty member.~~

~~Note: Permission of instructor required.~~

Credit hours 1-3

Repeatable

Yes

Number of repeats 5

For maximum credits 6

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Independent Study

Research

CIP Code 450701 - Geography.

Does this course have prerequisites

No Yes

Corequisites

Equivalent Courses

**Restrictions:**

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College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for changing

the course

Updated SLOs and course content. Updated title to be more descriptive for students seeking course and updated description to provide more detail on course content; there will be no changes to the learning outcomes or content delivered in the course. Removed METR 121 as prereq since course is used across programs in the Department.

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

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
<u>1</u>	<u>Demonstrate proficiency at conducting a literature review of the selected topic.</u>
<u>2</u>	<u>Demonstrate proficiency at analyzing data relevant to the selected topic.</u>
<u>3</u>	<u>Demonstrate proficiency at synthesizing topical material and effectively communicating in oral and written form.</u>
<u>4</u>	<u>Additional learning outcomes will vary with each topic.</u>

Content outline

#	Topic
<u>1</u>	<u>Course content will vary with research topic.</u>

Student expectations and requirements



Tentative texts and  
course materials

Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

# Course Change Request

Date Submitted: 02/07/23 3:43 pm

## Viewing: **GEOG 295 : Introduction to Research Methodology**

Last revision: 02/07/23 8:26 pm

Changes proposed by: amy83008

Catalog Pages  
referencing this  
course

[Department of Earth, Environmental, and Atmospheric Sciences  
Geography \(GEOG\)](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Amy Nemon</a>	<a href="mailto:amy.nemon@wku.edu">amy.nemon@wku.edu</a>	<a href="tel:270-745-3082">270-745-3082</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GEOG - Geography Course number 295

Department Geography & Geology

College Science and Engineering

Course title  
Introduction to Research Methodology

Abbreviated course title INTRO RESEARCH METHOD

### 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. 02/10/23 12:31 pm  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval

Course description

This course is designed to ~~To~~ familiarize research-oriented ~~Ogden Research Scholars and other research oriented~~ students with the fundamentals of choosing a research topic, performing a bibliographical search on a subject, classification of instruments, principles of data collection, ~~taking, data reduction,~~ professional ethics and/or other research-oriented ~~and other research-oriented~~ topics. ~~The common points of research methodology in the different scientific areas will be accentuated. Examples will be drawn from the various disciplines. Use of computers will be emphasized. (Course does not count towards any major or minor.)~~

Credit hours 1-3 ~~4~~

Repeatable

Yes

Number of repeats 3 ~~2~~

For maximum credits 3 ~~4~~

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                  450701 - Geography.

Does this course have prerequisites

No

Corequisites

Equivalent Courses

**Restrictions:**

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College restriction?      No

Field of study  
restriction/major?      No

Classification  
restriction?      No

Departmental  
Restrictions

Reason for changing  
the course

Add Learning Outcomes and Content Outlines. Clarified language in the description to reflect the focus of the course and differentiate it from other courses in ESGS; there will be no changes to the learning outcomes or content delivered in the course. The course DOES count toward for majors of EEAS, so that line was removed. The number of credit hours will vary based upon the particular cohort and teaching needs of the particular student group. 1-credit hour course should be repeatable up to 3 hours, particularly as different methodology topics could be covered in different semesters.

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
<u>1</u>	<u>Experience the fundamentals of choosing a research topic</u>
<u>2</u>	<u>Perform a bibliographical search on a subject</u>
<u>3</u>	<u>Classify instruments relevant to the geoscience</u>
<u>4</u>	<u>Collect and analyze data</u>
<u>5</u>	<u>Apply professional ethics</u>

Content outline

#	Topic
<u>1</u>	<u>Select a research topic</u> <u>Outline timeline for completion of research</u> <u>Review previous published studies on the topic</u> <u>Decide on instruments used to perform research</u>

#	Topic
	<u>Collect data needed to complete study</u> <u>Analyze collected data</u> <u>Adhere to proper research protocols</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

# Course Change Request

Date Submitted: 02/06/23 10:52 pm

Viewing: **GEOG 474 : Applied**

## Environmental Planning Applications

Last revision: 02/10/23 12:52 pm

Changes proposed by: jsn15309

Catalog Pages  
referencing this  
course

[Department of Earth, Environmental, and Atmospheric Sciences  
Geography \(GEOG\)](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Jason Polk</a>	<a href="mailto:jason.polk@wku.edu">jason.polk@wku.edu</a>	<a href="tel:270-745-5015">270-745-5015</a>

Review Type [Full Review](#)

Term for  
implementation Fall 2023

Academic Level Undergraduate

Course prefix  
(subject area) GEOG - Geography Course number 474

Department Geography & Geology

College Science and Engineering

Course title  
[Applied](#) Environmental Planning **Applications**

Abbreviated course  
title [APPLIED ENVIRONMENTAL](#) ~~ENV~~ PLANNING  
**APPLICATIONS**

### 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. 02/10/23 12:52 pm  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval

Course description

Analysis and application of advanced Integrative topics and results of recent research in environmental and general land use science, sustainability, and planning. Broad examination of mitigation, remediation, and land use planning challenges from an applied perspective as they relate to problem-solving scenarios in sustainable development. ~~Emphasis on sustainable community planning and development in urban and rural settings. Students study current models and policies from around the globe.~~ Note: Permission of instructor may be required.

Credit hours 3

Repeatable

No Yes

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Applied Learning

Lecture

CIP Code 450701 - Geography.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		GEOG 280	D	UG		
And		GEOG-210	D	UG		

Corequisites

Equivalent Courses

**Restrictions:**

College restriction? No

Field of study restriction/major? No

Classification No

restriction?

Departmental  
Restrictions

Reason for changing  
the course

Updated SLOs and outline. Changed title to be more concise and reflect course content. Updated description to incorporate SLOs and outline; there are no changes to the existing course content, we are merely revising the description to better describe topics already included. Removed GEOG 210 prerequisite, since the GEOG 280 course covers most of the foundational material needed for this course and is offered more frequently for students to satisfy the requirement.

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

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
<u>1</u>	<u>Develop an understanding of the major and applied environmental issues currently faced in the modern world.</u>
<u>2</u>	<u>Apply conceptual theories of environmental planning to real-world, applied issues through engaging in problem-solving and action-oriented responses.</u>
<u>3</u>	<u>Engage in the application of intellectual standards for identification of the elements of reasoning in order to form a global perspective across cultures, languages, nation-states, and geographic regions regarding environmental planning.</u>



#	Student Learning Outcomes
<u>4</u>	<u>Develop the capacity to apply knowledge and training to address relevant environmental concerns in community and society, respect for diversity of peoples, and ideas and cultures.</u>
<u>5</u>	<u>Demonstrate understanding of the interconnectedness between the environment, society, and economics to resolve environmental challenges.</u>
<u>6</u>	<u>Express an awareness of actions taken by responsible citizens living and working in a global society to sustainably address diverse environmental issues</u>

Content outline

#	Topic
<u>1</u>	<u>Landuse analysis</u> <u>Environmental management principles</u> <u>Green infrastructure and sustainability</u> <u>Environmental policies and planning</u> <u>Watershed planning</u> <u>Air Quality planning</u> <u>Hazards and risk planning</u> <u>Urbanization and transportation</u> <u>Climate and development</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

# Course Change Request

Date Submitted: 02/06/23 10:52 pm

Viewing: **GEOG 475 : Selected Topics in**  
**Environment, Geography, and**  
**Sustainability Geography**

Last revision: 02/07/23 2:32 pm

Changes proposed by: jsn15309

## 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. 02/10/23 12:53 pm  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval

Catalog Pages  
referencing this  
course

[Department of Earth, Environmental, and Atmospheric Sciences  
Geography \(GEOG\)](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Jason Polk</a>	<a href="mailto:jason.polk@wku.edu">jason.polk@wku.edu</a>	<a href="tel:270-745-5015">270-745-5015</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GEOG - Geography Course number 475

Department Geography & Geology

College Science and Engineering

Course title  
Selected Topics in [Environment, Geography, and Sustainability](#) **Geography**

Abbreviated course title [SELECT TOPICS ENV. GEO. & SUS](#) ~~IND~~  
**TOPICS/GEOGRAPHY**

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Course description

Special topics in applied or basic environmental, geographic, sustainability, or geoscience topics. ~~A study of a selected problem under the supervision of a faculty member.~~ Note: Permission of instructor ~~is~~ instructor may be required.

Credit hours                    1-3

Repeatable

Yes

Number of repeats            98

For maximum credits                    98

Default grade type            Standard Letter                    Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Independent Study

Lecture

Research

CIP Code                    450701 - Geography.

Does this course have prerequisites

No

Corequisites

Equivalent Courses

**Restrictions:**

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College restriction?            No

Field of study  
restriction/major?            No

Classification  
restriction?                    No ~~Yes~~

Departmental  
Restrictions

Reason for changing

the course

Updated SLOs and course outline. Updated description to reflect content of course as a special topics course, since GEOG 495 already covers independent study and internships. Removed junior status requirement to allow enrollment of all eligible students. Changed title to more accurately reflect course description and content.

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

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
<u>1</u>	<u>Demonstrate proficiency at conducting a literature review of the selected topic.</u>
<u>2</u>	<u>Demonstrate proficiency at analyzing data relevant to the selected topic.</u>
<u>3</u>	<u>Demonstrate proficiency at synthesizing topical material and effectively communicating in oral and written form.</u>
<u>4</u>	<u>Additional learning outcomes will vary with each topic.</u>

Content outline

#	Topic
<u>1</u>	<u>Course content with vary with topic.</u>

Student expectations and requirements

Tentative texts and

course materials

Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

# Course Change Request

Date Submitted: 02/06/23 10:53 pm

## Viewing: **GEOG 486 : Seminar in Environmental Science and Sustainability**

Last revision: 02/07/23 2:33 pm

Changes proposed by: jsn15309

### 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. 02/10/23 12:55 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Catalog Pages  
referencing this  
course

[Department of Earth, Environmental, and Atmospheric Sciences  
Geography \(GEOG\)](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Jason Polk</a>	<a href="mailto:jason.polk@wku.edu">jason.polk@wku.edu</a>	<a href="tel:270-745-5015">270-745-5015</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GEOG - Geography Course number 486

Department Geography & Geology

College Science and Engineering

Course title Seminar in Environmental Science and Sustainability

Abbreviated course title SEMINAR ENV SCI SUSTAINABILITY

Course description

Guided seminar-style course focused on current environmental and sustainability issues from an applied perspective. Students will discuss/debate environmental science and sustainability topics and lead discussion through examination of published literature, reflection, and having expert professionals and scientists in their respective fields provide experiential context for the issues being discussed. Career pathways will be discussed using examples from the discipline. ~~Current issues related to sustainability and/or environmental science discussed via invited lecturers, community engagements, and/or department and university-wide seminars. Students are expected to participate in assigned seminar activities throughout the duration of the course.~~

Credit hours 1-3

Repeatable

Yes

Number of repeats 6

For maximum credits 6

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Seminar

CIP Code 450701 - Geography.

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 changing the course

Updated SLOs and course description to better convey breadth of course content/topics that can be included in the seminar course. Updated content outline.

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

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
<u>1</u>	<u>Provide in-depth analysis of current issues in environmental science and sustainability.</u>
<u>2</u>	<u>Evaluate and present scientific data for discussion.</u>
<u>3</u>	<u>Prepare and deliver scientific and technical information about environmental science and sustainability.</u>
<u>4</u>	<u>Exercise critical judgement and think rigorously and independently about scientific and social concepts.</u>

Content outline

#	Topic
<u>1</u>	<u>Course content will vary with current event topics and speakers.</u>

Student expectations and requirements

Tentative texts and



course materials

Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

# Course Change Request

Date Submitted: 02/07/23 1:25 pm

## Viewing: **GEOG 487 : Environmental Management and Law**

Last revision: 02/14/23 10:52 am

Changes proposed by: amy83008

### In Workflow

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

Catalog Pages referencing this course

[Department of Earth, Environmental, and Atmospheric Sciences Geography \(GEOG\)](#)

### Approval Path

1. 02/10/23 12:55 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Amy Nemon</a>	<a href="mailto:amy.nemon@wku.edu">amy.nemon@wku.edu</a>	<a href="tel:270-745-3082">270-745-3082</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GEOG - Geography Course number 487

Department Geography & Geology

College Science and Engineering

Course title Environmental Management and Law

Abbreviated course title ENV MANAGEMENT & LAW

Course description

An introductory course on environmental management and law. Environmental Law is comprised of a vast body of legislation and common law, and management and law dominate all aspects of society. It is important to understand that law isn't designed to determine what is 'right or moral,' but rather to enforce what is expedient for society's optimal functioning. This course will include a thorough examination Examination of major legislative, administrative, and judicial management approaches to addressing current environmental conditions related, but not limited to, natural resource consumption and air, water, and hazardous pollutants, pollutants in the United States and abroad. ~~Note:GEOG 210 required for Geography majors and minors.~~

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 450701 - Geography.

Does this course have prerequisites

No

Corequisites

Equivalent Courses

**Restrictions:**

---

College restriction? No

Field of study restriction/major? No

Classification restriction? No Yes

Departmental Restrictions

Reason for changing the course

Add Learning Outcomes and Content Outlines. Description changed to use more modern terminology and broadly encompass the objectives of the course; there will be no changes to the existing learning outcomes or content delivered in the course.

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
<u>1</u>	<u>Evaluate the role of law in policymaking</u>
<u>2</u>	<u>Examine common policy and management tools utilized in the United States environmental regulatory scheme from the scientific, technical, political, administrative, historical, legal, and social perspectives</u>
<u>3</u>	<u>Develop an understanding of the purpose, structure, and key provisions of major federal environmental laws and resource management strategies</u>
<u>4</u>	<u>Develop an understanding of the processes and instruments used to enforce laws</u>
<u>5</u>	<u>Critically evaluate the future directions of environmental law and policy</u>

Content outline

#	Topic
<u>1</u>	<u>Basics of Environmental Management and Law</u> <u>Historical Context of Environmental Regulation</u> <u>Strategies for Creating and Implementing Environmental Regulations</u> <u>International Environmental Law</u>

#	Topic
	<u>Climate, Energy, and Air Regulations</u> <u>Regulating Public Lands</u> <u>Economics of Environmental Law</u> <u>Environmental Impact Statements and Regulation Enforcement</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

# Course Change Request

Date Submitted: 02/06/23 10:54 pm

Viewing: **GEOG 495 : Applied Research, Independent Study, Research Practicum or Internship**

Last revision: 02/10/23 12:56 pm

Changes proposed by: jsn15309

Catalog Pages  
referencing this  
course

[Department of Earth, Environmental, and Atmospheric Sciences  
Geography \(GEOG\)](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Jason Polk</a>	<a href="mailto:jason.polk@wku.edu">jason.polk@wku.edu</a>	<a href="tel:270-745-5015">270-745-5015</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GEOG - Geography Course number 495

Department Geography & Geology

College Science and Engineering

Course title [Applied Research, Independent Study, Research Practicum](#) or Internship

Abbreviated course title [RESEARCH, IND STUDY, RESEARCH PRACTICUM](#) OR INTERN

## 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. 02/10/23 12:56 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

---

Course description

Supervised research, independent study, ~~research~~ or internship with faculty, research center, lab, government, community, or private sector. ~~concerns~~. May be repeated for a maximum of 12 credit hours in the major, with a maximum of 6 credit hours permitted in minor programs. ~~Note: Permission of instructor required.~~

Credit hours                    1-9

Repeatable

Yes

Number of repeats            12 ~~11~~

For maximum credits                    12

Default grade type            Standard Letter                    Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Independent Study

Internship

Practicum

CIP Code                    450701 - Geography.

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 changing

the course

Updated SLOs and outline, Updated course title and description for clarity to better match course usage and intent in program.

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

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
<u>1</u>	<u>Demonstrate application of concepts and methods to selected topic.</u>
<u>2</u>	<u>Integrate academic theory with practical experience in a professional field of interest.</u>
<u>3</u>	<u>Demonstrate proficiency at preparing deliverables to appropriate stakeholders relevant to the selected topic.</u>
<u>4</u>	<u>Additional learning outcomes will vary with each topic.</u>

Content outline

#	Topic
<u>1</u>	<u>Course content will vary with topic.</u>

Student expectations and requirements

Tentative texts and course materials



Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

# Course Change Request

Date Submitted: 02/15/23 3:43 pm

Viewing: **GEOL 111 : The Earth**

Last revision: 02/15/23 3:43 pm

Changes proposed by: ryh84947

## In Workflow

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

Catalog Pages  
referencing this  
course

[Astronomy\\_\(ASTR\)](#)

[Civil Engineering\\_\(CE\)](#)

## Proposed Action

## Approval Path

1. 02/10/23 12:57 pm  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval
2. 02/14/23 2:35 pm  
Stuart Burris  
(stuart.burris):  
Rollback to Initiator
3. 02/15/23 8:57 pm  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval

Active

## Contact(s)

Name	E-mail	Phone
<a href="#">Margaret Crowder</a>	<a href="mailto:margaret.crowder@wku.edu">margaret.crowder@wku.edu</a>	<a href="tel:270-745-5973">270-745-5973</a>

Review Type [Full Review](#)

Term for  
implementation Fall 2023

Academic Level	Undergraduate		
Course prefix (subject area)	GEOL - Geology	Course number	111
Department	Geography & Geology		
College	Science and Engineering		
Course title The Earth			
Abbreviated course title	THE EARTH		

#### Course description

The study of Earth including rocks, mineral resources, energy, soils, surface geologic processes, earthquakes and Earth's interior, global tectonics, hydrology, and environmental geology. Students electing to meet their general education laboratory requirement through GEOL 113 must simultaneously enroll in the GEOL 111 lecture course. Laboratory is required for Geology majors ~~majors, minors~~, and some prospective science teachers, but is optional for most others.

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 400601 - Geology/Earth Science, General.

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 changing  
the course

Added SLOs and content outline. SLOs were streamlined and updated in the light of recent development of the Geology 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

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

Are you seeking  
Colonnade approval  
for this course? Yes

Colonnade  
Programs Explorations

Explorations: Course  
Categories Natural & Physical Sciences

Please provide a brief rationale for why this existing course fits into the Colonnade program that addresses why the proposals is being submitted now.

N/A

Colonnade Proposal

Syllabus Geol 111\_Syllabus.docx

## Colonnade Learning

### Outcomes

#	Colonnade Learning Outcomes
<u>1</u>	<u>Demonstrate an understanding of the methods of scientific inquiry.</u>
<u>2</u>	<u>Explain basic concepts and principles in one or more of the sciences.</u>
<u>3</u>	<u>Apply scientific principles to interpret and make predictions in one or more of the sciences.</u>
<u>4</u>	<u>Explain how scientific principles relate to issues of personal and/or public importance.</u>

## Student Learning

### Outcomes

#	Student Learning Outcomes
<u>1</u>	<u>Demonstrate an understanding of the geological methods and principles to investigate Earth.</u>
<u>2</u>	<u>Develop an ability in identifying important minerals and the three rock types.</u>
<u>3</u>	<u>Demonstrate knowledge of: the physical and chemical properties of the lithosphere and hydrosphere, and crustal materials and dynamics in the context of plate tectonics theory.</u>
<u>4</u>	<u>Explain the importance of earth science in our health, well-being, and quality of life (e.g., critical minerals, natural hazards, water, and climate).</u>

## Content outline

#	Topic
<u>1</u>	<ul style="list-style-type: none"><li><u>• Plate tectonics</u></li><li><u>• Minerals</u></li><li><u>• Igneous, metamorphic &amp; sedimentary rocks</u></li><li><u>• Surficial processes– volcanism, mass wasting, weathering</u></li><li><u>• Geologic time and geological principles</u></li><li><u>• Earth structure &amp; crustal deformation</u></li><li><u>• Streams and groundwater</u></li><li><u>• Geologic hazards in context of a rapidly changing planet</u></li></ul>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

**Stuart Burris (stuart.burris) (02/14/23 2:35 pm):** Rollback: Course LOs are not the same as those in the Colonnade proposal from 2013.

Key: 4220

# Course Change Request

Date Submitted: 02/15/23 3:56 pm

## Viewing: **GEOL 112 : Earth's Past and Future**

Last revision: 02/15/23 3:56 pm

Changes proposed by: ryh84947

### In Workflow

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

Catalog Pages referencing this course

[Anthropology \(ANTH\)](#)

[Colonnade Requirements](#)

### Proposed Action

### Approval Path

1. 02/10/23 12:57 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval
2. 02/14/23 2:35 pm  
Stuart Burris  
(stuart.burris):  
Rollback to Initiator
3. 02/15/23 8:55 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Active

### Contact(s)

Name	E-mail	Phone
<a href="#">M. Royhan Gani</a>	<a href="mailto:royhan.gani@wku.edu">royhan.gani@wku.edu</a>	<a href="tel:270-745-5977">270-745-5977</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level	Undergraduate		
Course prefix (subject area)	GEOL - Geology	Course number	112
Department	Geography & Geology		
College	Science and Engineering		
Course title	Earth's Past and Future		
Abbreviated course title	EARTH'S PAST AND FUTURE		

#### Course description

Deep time study of Earth, life, and climate to understand how the planet - our only home - has changed in the past and what this means for the future of human species. Students electing to meet their general education laboratory requirement through GEOL 114 must simultaneously enroll in GEOL 112. Laboratory (GEOL 114) is required for Geology majors and some prospective science teachers, but is optional for most others.

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            400601 - Geology/Earth Science, General.

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 changing the course

[Added SLOs and course content. SLOs were updated in the light of recent development of the Geology 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](#)

Is this course part of a program that leads to teacher certificate? [No](#)

Are you seeking Colonnade approval for this course? Yes

Colonnade Programs [Explorations](#)

Explorations: Course Categories Natural & Physical Sciences

Please provide a brief rationale for why this existing course fits into the Colonnade program that addresses why the proposals is being submitted now.

[N/A](#)

Colonnade Proposal

Syllabus [GEOL 112 Syllabus.pdf](#)

Colonnade Learning

## Outcomes

#	Colonnade Learning Outcomes
<u>1</u>	<u>Demonstrate an understanding of the methods of scientific inquiry.</u>
<u>2</u>	<u>Explain basic concepts and principles in one or more of the sciences.</u>
<u>3</u>	<u>Apply scientific principles to interpret and make predictions in one or more of the sciences.</u>
<u>4</u>	<u>Explain how scientific principles relate to issues of personal and/or public importance.</u>

## Student Learning

### Outcomes

#	Student Learning Outcomes
<u>1</u>	<u>Demonstrate an understanding of the geological methods and principles to decipher Earth's past.</u>
<u>2</u>	<u>Explain how the earth systems evolved through geologic time.</u>
<u>3</u>	<u>Apply knowledge of earth's past to analyze the present and future status of the earth and its environment.</u>
<u>4</u>	<u>Build awareness of global challenges regarding earth's habitat and climate.</u>
<u>5</u>	<u>Evaluate the past and predict the future of human and other biological evolution.</u>

## Content outline

#	Topic
<u>1</u>	<ul style="list-style-type: none"><li><u>• Early Geologists and Geological principles</u></li><li><u>• Geological time scale</u></li><li><u>• Rocks and minerals</u></li><li><u>• Sedimentary record</u></li><li><u>• Plate tectonics</u></li><li><u>• Precambrian events and life</u></li><li><u>• Paleozoic events and life</u></li><li><u>• Mesozoic events and life</u></li><li><u>• Cenozoic events and life</u></li><li><u>• Recent climate change</u></li><li><u>• Human origin</u></li></ul>

## Student

expectations and  
requirements

Tentative texts and  
course materials

Special equipment,

materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

**Stuart Burris (stuart.burris) (02/14/23 2:35 pm):** Rollback: Course LOs are not the same as those in the Colonnade proposal from 2014.

Key: 4221

# Course Change Request

Date Submitted: 02/15/23 3:54 pm

Viewing: **GEOL 113 : The Earth Laboratory**

Last revision: 02/15/23 3:54 pm

Changes proposed by: ryh84947

## In Workflow

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

Catalog Pages  
referencing this  
course

[Civil Engineering \(CE\)](#)  
[Colonnade Requirements](#)

## Proposed Action

## Approval Path

1. 02/10/23 12:57 pm  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval
2. 02/14/23 2:35 pm  
Stuart Burris  
(stuart.burris):  
Rollback to Initiator
3. 02/15/23 8:56 pm  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval

Active

## Contact(s)

Name	E-mail	Phone
<a href="#">Margaret Crowder</a>	<a href="mailto:margaret.crowder@wku.edu">margaret.crowder@wku.edu</a>	<a href="tel:270-745-5973">270-745-5973</a>

Review Type [Full Review](#)

Term for  
implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GEOL - Geology Course number 113

Department Geography & Geology

College Science and Engineering

Course title  
The Earth Laboratory

Abbreviated course title THE EARTH LABORATORY

Course description

Laboratory work designed to accompany GEOL 111. Minerals, rocks, topographic maps, geologic maps, streams, and groundwater ~~aerial-photographs~~ are studied. This laboratory is required for Geology majors ~~majors,~~ ~~minors~~ and some prospective science teachers, but is optional for most others.

Credit hours 1

Repeatable

Yes

Number of repeats 2

For maximum credits 1

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Lab

CIP Code 400601 - Geology/Earth Science, General.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
	(	GEOL 111	D	UG		Yes
Or		GEOG 103	D	UG		Yes

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
Or		GEOL 103	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

Course description is slightly modified to remove obsolete technique of aerial photography, and add stream and groundwater.

Added SLOs and course content. SLOs were streamlined and updated in the light of recent development of the Geology 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

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

Are you seeking Colonnade approval for this course? Yes ~~No~~

Colonnade [Explorations](#)

Programs

Explorations: Course Natural & Physical Sciences Lab

Categories

Please provide a brief rationale for why this existing course fits into the Colonnade program that addresses why the proposals is being submitted now.

[N/A](#)

Colonnade Proposal

Syllabus [Geol 113 Syllabus.docx](#)

Colonnade Learning

Outcomes

#	Colonnade Learning Outcomes
<u>1</u>	<u>Demonstrate an understanding of the methods of scientific inquiry.</u>
<u>2</u>	<u>Explain basic concepts and principles in one or more of the sciences.</u>
<u>3</u>	<u>Apply scientific principles to interpret and make predictions in one or more of the sciences.</u>
<u>4</u>	<u>Explain how scientific principles relate to issues of personal and/or public importance.</u>

Student Learning

Outcomes

#	Student Learning Outcomes
<u>1</u>	<u>Demonstrate an understanding of the genesis and classification of minerals and rocks.</u>
<u>2</u>	<u>Analyze various types of geologic maps to investigate topography and earth processes.</u>
<u>3</u>	<u>Apply concepts of structural geology and plate tectonics to interpret Earth's structure.</u>
<u>4</u>	<u>Utilize knowledge of geological data analysis to examine, and recognize the societal relevance of, the Earth Systems (e.g., streams and groundwater).</u>

Content outline

#	Topic
<u>1</u>	<ul style="list-style-type: none"><li><u>• Identification and classification of important minerals</u></li><li><u>• Discrimination of igneous, metamorphic, and sedimentary rocks</u></li><li><u>• Use of sedimentary rocks for interpreting ancient environments</u></li><li><u>• Geologic time</u></li><li><u>• Topographic maps</u></li><li><u>• Geologic maps</u></li><li><u>• Geologic structures</u></li><li><u>• Streams and groundwater</u></li></ul>

Student

expectations and  
requirements

Tentative texts and  
course materials

Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

**Stuart Burris (stuart.burris) (02/14/23 2:35 pm):** Rollback: Course LOs are not the same as those in the Colonnade proposal from 2013.



# Course Change Request

Date Submitted: 02/15/23 3:57 pm

## Viewing: **GEOL 114 : Earth's Past and Future Lab**

Last approved: 01/31/23 8:52 am

Last revision: 02/15/23 3:57 pm

Changes proposed by: ryh84947

Catalog Pages  
referencing this  
course

[Colonnade Requirements](#)  
[Department of Earth, Environmental, and Atmospheric Sciences](#)

Proposed Action

### In Workflow

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

### Approval Path

1. 02/10/23 12:57 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval
2. 02/14/23 2:36 pm  
Stuart Burris  
(stuart.burris):  
Rollback to Initiator
3. 02/15/23 8:53 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

### History

1. Jan 31, 2023 by  
Jessica Dorris  
(jessica.dorris)

Active

Contact(s)

Name	E-mail	Phone
------	--------	-------

Name	E-mail	Phone
<a href="#">M. Royhan Gani</a>	<a href="mailto:royhan.gani@wku.edu">royhan.gani@wku.edu</a>	<a href="tel:270-745-5977">270-745-5977</a>

Review Type	<a href="#">Full Review</a>		
Term for implementation	Fall 2023		
Academic Level	Undergraduate		
Course prefix (subject area)	GEOL - Geology	Course number	114
Department	Geography & Geology		
College	Science and Engineering		
Course title	Earth's Past and Future Lab		
Abbreviated course title	EARTH'S PAST AND FUTURE LAB		

#### Course description

Laboratory to accompany GEOL 112, which is a deep time study of Earth, life, and climate. This laboratory is required for Geology majors and some prospective science teachers, but is optional for most other students.

Credit hours 1

#### Repeatable

Yes

Number of repeats 2

For maximum credits 1

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

#### Schedule type

Lab

CIP Code 400601 - Geology/Earth Science, General.

Does this course have prerequisites

Yes

#### Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		GEOL 112	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

Added SLOs and course content. SLOs were updated in the light of recent development of the Geology 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

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

Are you seeking Colonnade approval for this course? Yes ~~No~~

Colonnade Explorations

## Programs

Explorations: Course Natural & Physical Sciences Lab

## Categories

Please provide a brief rationale for why this existing course fits into the Colonnade program that addresses why the proposals is being submitted now.

N/A

Colonnade Proposal

Syllabus [GEOL 114 Syllabus.pdf](#)

## Colonnade Learning

### Outcomes

#	Colonnade Learning Outcomes
<u>1</u>	<u>Demonstrate an understanding of the methods of scientific inquiry.</u>
<u>2</u>	<u>Explain basic concepts and principles in one or more of the sciences.</u>
<u>3</u>	<u>Apply scientific principles to interpret and make predictions in one or more of the sciences.</u>
<u>4</u>	<u>Explain how scientific principles relate to issues of personal and/or public importance.</u>

## Student Learning

### Outcomes

#	Student Learning Outcomes
1	<u>Apply the concepts of relative and absolute dating to interpret earth history.</u>
<u>2</u>	<u>Demonstrate an understanding of the genesis of rocks.</u>
<u>3</u>	<u>Identify fossils and use them to reconstruct past environments.</u>
<u>4</u>	<u>Utilize stratigraphic concepts to correlate rock units.</u>
<u>5</u>	<u>Apply the concept of biological evolution to evaluate fossil record and predict the future of life.</u>

## Content outline

#	Topic
1	<ul style="list-style-type: none"><li><u>• Geologic time</u></li><li><u>• Sedimentary rocks</u></li><li><u>• Depositional environments</u></li><li><u>• Stratigraphic correlation</u></li><li><u>• Fossil preservation</u></li><li><u>• Evolution</u></li><li><u>• Fossil identification</u></li><li><u>• Human evolution</u></li></ul>

## Student

expectations and  
requirements

Tentative texts and  
course materials

Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

**Stuart Burris (stuart.burris) (02/14/23 2:36 pm):** Rollback: Course LOs are not the same as those in the Colonnade proposal from 2014.

# Course Change Request

Date Submitted: 02/07/23 9:11 pm

## Viewing: **GEOL 305 : Earth System Science for Teachers**

Last revision: 02/07/23 9:11 pm

Changes proposed by: nhd42403

### In Workflow

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

Catalog Pages referencing this course

[Department of Earth, Environmental, and Atmospheric Sciences Geology\\_\(GEOL\)](#)

### Proposed Action

### Approval Path

1. 02/10/23 12:58 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Active

### Contact(s)

Name	E-mail	Phone
<a href="#">Margaret Crowder</a>	<a href="mailto:margaret.crowder@wku.edu">margaret.crowder@wku.edu</a>	<a href="tel:270-745-5973">270-745-5973</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GEOL - Geology Course number 305

Department Geography & Geology

College Science and Engineering

Course title  
Earth System Science for Teachers

Abbreviated course title      EARTH SYS SCI FOR TEACHERS

Course description

Engages students in Earth System Science (ESS) as an integrating method for teaching about the Earth. Primarily designed for undergraduate students who plan to become K-12 teachers, students use real-world examples in lessons they can adapt for their own future classroom use. Collaborative, problem-based learning (PBL) experience, using real-world examples to enhance student understanding of earth system science, with a focus on relevance in science teaching grades K-12. Includes PBL-based lesson plan development. Applicable towards a major in Geology only for those students seeking teacher certification.

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

CIP Code                      400601 - Geology/Earth Science, General.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
	(	GEOL 111	D	UG		
And		GEOL 113	D	UG	)	
Or	(	GEOL 112	D	UG		
And		GEOL 114	D	UG	)	

Corequisites

Equivalent Courses

## Restrictions:

---

College restriction? No

Field of study  
restriction/major? No

Classification  
restriction? No

Departmental  
Restrictions

Reason for changing  
the course

The course description is being modified to provide a more broad-based approach to the course material beyond solely problem-based-learning (PBL) and to clearly describe the student population best served by this class. PBL and collaborative work will still be components of student learning but are not the only learning styles students will encounter in the class.

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

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

Are you seeking  
Colonnade approval  
for this course? No

Student Learning  
Outcomes

#	Student Learning Outcomes
<u>1</u>	<u>Demonstrate a capacity for critical thinking about Earth systems and processes.</u>
<u>2</u>	<u>Interpret connections between local sites and learned concepts.</u>



#	Student Learning Outcomes
<u>3</u>	<u>Predict how changes in one area of the Earth system can affect other areas.</u>
<u>4</u>	<u>Identify connections between climate and the Earth systems.</u>
<u>5</u>	<u>Explain the societal relevance of earth systems.</u>

Content outline

#	Topic
<u>1</u>	<ul style="list-style-type: none"> <li>• <u>The Earth as a system</u></li> <li>• <u>Energy and matter exchange in the Earth system</u></li> <li>• <u>Reservoirs, fluxes, and cycles</u></li> <li>• <u>Global circulation – oceans, atmosphere</u></li> <li>• <u>Climate change</u></li> <li>• <u>Impacts of events (natural and anthropogenic) in the Earth system</u></li> </ul>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

# Course Change Request

Date Submitted: 02/14/23 10:27 am

Viewing: **GEOL 405 : Paleontology**

Last revision: 02/14/23 10:39 am

Changes proposed by: ryh84947

Catalog Pages  
referencing this  
course

[Department of Earth, Environmental, and Atmospheric Sciences  
Geology\\_\(GEOL\)](#)

## In Workflow

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

## Proposed Action

## Approval Path

1. 02/10/23 12:59 pm  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval
2. 02/14/23 10:13 am  
Stuart Burris  
(stuart.burris):  
Rollback to Initiator
3. 02/14/23 10:39 am  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval

Active

## Contact(s)

Name	E-mail	Phone
<a href="#">Nahid Gani</a>	<a href="mailto:nahid.gani@wku.edu">nahid.gani@wku.edu</a>	<a href="tel:270-745-2813">270-745-2813</a>

Review Type [Full Review](#)

Term for  
implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area)	GEOL - Geology	Course number	405
Department	Geography & Geology		
College	Science and Engineering		
Course title	Paleontology		
Abbreviated course title	PALEONTOLOGY		

Course description

A basic course in paleobiology including the nature of the fossil record, preservation, basic factors and theories relating to the origin and development of living systems and the process of evolution, the species concept, systematics, and paleoecology. Major invertebrate taxa with a significant fossil record are also studied. Laboratory work includes the examination, description, and classification of fossil specimens. Note: Permission of instructor may be required.

Credit hours            4

Repeatable

Yes

Number of repeats    2

For maximum credits            4

Default grade type    Standard Letter            Alternate grade type(s)  
NG-No Grade

Is this course intended to span more than one term?

No

Schedule type

~~Lab~~

~~Lecture~~

Applied Learning

CIP Code            400601 - Geology/Earth Science, General.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
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And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		GEOL 112	D	UG		
And		GEOL 114	D	UG		
And		<del>BIOL 122</del>	<del>D</del>	<del>UG</del>		
And		<del>BIOL 123</del>	<del>D</del>	<del>UG</del>		

Corequisites

Equivalent Courses

### Restrictions:

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College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for changing the course

Added SLOs and content outline. BIOL 122 and BIOL 123 were removed from the prerequisites since these are no longer required in our program curriculum.

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.

Mike Stokes in BIOL was contacted on 2/13/23. No concerns were raised.

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
<u>1</u>	<u>Determine the mode of preservation of any given fossil group.</u>
<u>2</u>	<u>Identify and describe the major groups of invertebrate fossils down to the level of Order or lower.</u>
<u>3</u>	<u>Discuss the paleobiology and evolutionary history of the major invertebrate fossil groups.</u>
<u>4</u>	<u>Make use of fossils in paleoenvironmental reconstructions and correlating geological sections.</u>

Content outline

#	Topic
<u>1</u>	<ul style="list-style-type: none"><li>• <u>Introduction &amp; Fossil Preservation</u></li><li>• <u>Environments, Life Modes, and Organism Classification</u></li><li>• <u>Porifera and Cnideria</u></li><li>• <u>Cnideria and Reefs</u></li><li>• <u>The Brachiopods &amp; Review</u></li><li>• <u>Bryozoans</u></li><li>• <u>Gastropods and Bivalves</u></li><li>• <u>Bivalves and Cephalopods</u></li><li>• <u>Arthropods</u></li><li>• <u>Trilobites &amp; Echinoderms</u></li><li>• <u>Micropaleontology</u></li><li>• <u>Biostratigraphy</u></li></ul>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting  
documentation

Reviewer Comments

**Stuart Burris (stuart.burris) (02/14/23 10:13 am):** Rollback: Proposal has multiple non-SLO changes (course type and pre-req), so it will need to go through Full Review. There is also not an indication that Biology was notified about dropping BIOL 122/123 from the pre-reqs.

Key: 4247

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# Course Change Request

Date Submitted: 02/07/23 8:39 pm

Viewing: **GEOL 420 : Geomorphology**

Also listed as: **GEOG 420**

Last revision: 02/07/23 8:39 pm

Changes proposed by: nhd42403

## In Workflow

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

Catalog Pages referencing this course

**GEOG 420:**  
[Department of Earth, Environmental, and Atmospheric Sciences](#)

## Approval Path

1. 02/07/23 1:18 pm  
Leslie North  
(leslie.north):  
Rollback to Initiator
2. 02/10/23 12:44 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Nahid Gani</a>	<a href="mailto:nahid.gani@wku.edu">nahid.gani@wku.edu</a>	<a href="tel:270-745-2813">270-745-2813</a>

Review Type	<a href="#">Full Review</a>		
Term for implementation	Fall 2023		
Academic Level	Undergraduate		
Course prefix (subject area)	GEOL - Geology	Course number	420
Department	Geography & Geology		
College	Science and Engineering		

Course title

Geomorphology

Abbreviated course title      GEOMORPHOLOGY

Course description

Systematic ~~The study of the processes that shape origin, history, and modify Earth's characteristics of~~ landforms ~~produced by fluvial, glacial, wind, and landscapes in a variety of spatial~~ wave erosion and temporal scales. ~~mass-wasting and ground water or by combination of these, acting upon the major types of earth materials and structures.~~ Coupling between climatic, biologic, tectonic, and human influences on landscape changes is examined. ~~Laboratory work includes the interpretation of topographic and geologic maps, air photos, and stereopairs. A field trip may be required.~~

Credit hours                      3

Repeatable

Yes

Number of repeats              2

For maximum credits              3 4

Default grade type              Standard Letter                      Alternate grade type(s)  
NG-No Grade

Is this course intended to span more than one term?

No

Schedule type

~~Lab~~

Lecture

CIP Code                          400601 - Geology/Earth Science, General.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
	(	GEOL 111	D	UG		
Or		GEOG 103	D	UG		
Or		GEOL 103	D	UG	)	



Corequisites

Equivalent Courses

GEOG 420

Department

Geography & Geology

College

Science and Engineering

### Restrictions:

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College restriction? No

Field of study  
restriction/major? No

Classification  
restriction? No

Departmental  
Restrictions

Reason for changing  
the course

Reason for course description revision: Course description was revised to make it more concise and specific to the course contents for better serving students' learning objectives. This description is similar to the graduate section, GEOS 521.

Because this course and GEOG/GEOL 420 and GEOS 521 are cross-listed graduate-undergraduate course, to make them similar the lab and field components were removed from this undergraduate course.

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

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

Are you seeking No

Colonnade approval  
for this course?

Student Learning  
Outcomes

#	Student Learning Outcomes
<u>1</u>	<u>Build knowledge on the full range of earth's surface processes that shape and erode the landscape.</u>
<u>2</u>	<u>Explain dynamic interactions between various surface processes, environment, and society in the Anthropocene.</u>
<u>3</u>	<u>Interpret geomorphic data by applying advanced techniques to solve scientific queries related to landscapes' change and know their relation to surface dynamics with climatic and tectonic forcings.</u>
<u>4</u>	<u>Present geomorphologic topics through scientific papers, projects, poster, and general discussion.</u>

Content outline

#	Topic
<u>1</u>	<u>1. Earth's Dynamic Surface</u> <u>2. Geomorphologist's Tool Kit</u> <u>3. Geomorphic Hydrology: Karst-Processes and Landforms</u> <u>4. Weathering and Soils</u> <u>5. Hillslopes</u> <u>6. Channels</u> <u>7. Drainage Basins</u> <u>8. Coastal and Submarine Geomorphology</u> <u>9. Glacial and Periglacial Geomorphology</u> <u>10. Tectonic &amp; Volcanic Geomorphology</u> <u>11. Geomorphology and Climate</u> <u>12. Landscape Evolution</u>

Student  
expectations and  
requirements

Tentative texts and  
course materials

Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

**Leslie North (leslie.north) (02/07/23 1:18 pm):** Rollback: Request to edit further.

Key: 4256

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# Course Change Request

Date Submitted: 02/14/23 10:29 am

## Viewing: **GEOL 432 : Diffraction and Spectroscopy**

Last revision: 02/14/23 10:41 am

Changes proposed by: ryh84947

Catalog Pages  
referencing this  
course

[Department of Earth, Environmental, and Atmospheric Sciences  
Geology\\_\(GEOL\)](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Nahid Gani</a>	<a href="mailto:nahid.gani@wku.edu">nahid.gani@wku.edu</a>	<a href="tel:270-745-2813">270-745-2813</a>

Review Type [Full Review](#)

Term for  
implementation Fall 2023

Academic Level Undergraduate

### 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. 02/10/23 12:59 pm  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval
2. 02/14/23 10:14 am  
Stuart Burris  
(stuart.burris):  
Rollback to Initiator
3. 02/14/23 10:41 am  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval

Course prefix (subject area) GEOL - Geology Course number 432

Department Geography & Geology

College Science and Engineering

Course title  
Diffraction and Spectroscopy

Abbreviated course title DIFFRACTION AND SPECTROSCOPY

Course description

Theory and experimental practices of modern analytical techniques for the analysis of crystal structures. Focuses on the study of crystallography, crystal chemistry, and their physical and chemical properties. Laboratory fee required.

Credit hours 4

Repeatable

Yes

Number of repeats 2

For maximum credits 4

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Lecture/Lab

Applied Learning

CIP Code 400601 - Geology/Earth Science, General.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
	(	<u>GEOL 111</u> <del>GEOG 325</del>	D	UG		<u>No</u>
<u>And Or</u>		GEOL <u>113</u> <del>330</del>	D	UG		<u>No</u>

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
Or		CHEM-222	D	UG		
Or		PHYS-266	D	UG	)	

Corequisites

Equivalent Courses

### Restrictions:

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College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for changing the course

Added SLOs and content outline. Since GEOL 325, GEOL 330, CHEM 222, and PHYS 226 are no longer required in our program curriculum, these prerequisite courses are replaced with GEOL 111 and GEOL 113.

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.

Mike Carini in Physics/Astronomy and Kevin Williams in Chemistry were both contacted on 2/13/23. No concerns were raised.

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

Are you seeking Colonnade approval? No

for this course?

Student Learning  
Outcomes

#	Student Learning Outcomes
<u>1</u>	<u>Find and use the information on instrumentation topics from a variety of sources, including peer-reviewed literature and electronic sources.</u>
<u>2</u>	<u>Show an ability to determine compositional/structural/thermal/ properties of complex materials using the instrumentation covered.</u>
<u>3</u>	<u>Determine the ability to integrate data analysis and their significance in a coherent and meaningful manner.</u>
<u>4</u>	<u>Evaluate critically data results and be able to quantify errors in the analysis.</u>
<u>5</u>	<u>Build the ability to think critically about instrumentation issues through either writing and/or discussion.</u>

Content outline

#	Topic
<u>1</u>	<ul style="list-style-type: none"><li><u>• Overview and training of the instruments</u></li><li><u>• Raman and Powder XRD</u></li><li><u>• TGA/DSC, ICP, and Single Crystal XRD at AMI</u></li><li><u>• Sources of analytical errors</u></li><li><u>• Simultaneous Learning</u></li><li><u>• Projects</u></li><li><u>• Analysis of unknown</u></li></ul>

Student  
expectations and  
requirements

Tentative texts and  
course materials

Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting

documentation

Reviewer Comments

**Stuart Burris (stuart.burris) (02/14/23 10:14 am):** Rollback: Proposal has multiple non-SLO changes and will have to go Full. Need to contact Chemistry and Physics/Astronomy in re pre-req deletion.

Key: 4261

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# Course Change Request

Date Submitted: 02/14/23 10:31 am

Viewing: **GEOL 440 : Hydrogeology**

Last revision: 02/14/23 10:42 am

Changes proposed by: ryh84947

## In Workflow

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

Catalog Pages  
referencing this  
course

[Department of Earth, Environmental, and Atmospheric Sciences  
Geology\\_\(GEOL\)](#)

## Proposed Action

## Approval Path

1. 02/07/23 9:35 pm  
Leslie North  
(leslie.north):  
Rollback to Initiator
2. 02/09/23 11:56 am  
Leslie North  
(leslie.north):  
Rollback to Initiator
3. 02/10/23 12:59 pm  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval
4. 02/14/23 10:14 am  
Stuart Burris  
(stuart.burris):  
Rollback to Initiator
5. 02/14/23 10:42 am  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval

Active

Contact(s)

Name	E-mail	Phone
------	--------	-------

Name	E-mail	Phone
<a href="#">Nahid Gani</a>	<a href="mailto:nahid.gani@wku.edu">nahid.gani@wku.edu</a>	<a href="tel:270-745-2813">270-745-2813</a>

Review Type	<a href="#">Full Review</a>		
Term for implementation	Fall 2023		
Academic Level	Undergraduate		
Course prefix (subject area)	GEOL - Geology	Course number	440
Department	Geography & Geology		
College	Science and Engineering		
Course title	Hydrogeology		
Abbreviated course title	HYDROGEOLOGY		

#### Course description

Origin, occurrence, and movement of ground water; water wells and aquifer evaluations; exploratory investigations; quality of ground water supplies; legal aspects.

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 400601 - Geology/Earth Science, General.

Does this course have prerequisites

Yes

#### Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		<u>GEOL 111</u> <del>MATH 136</del>	D	UG		<u>No</u> <del>Yes</del>
And	(	GEOG-310	D	UG		
Or		GEOL-310	D	UG	)	
<u>Or</u>		<u>GEOL 103</u>	<u>D</u>	<u>UG</u>		<u>No</u>
<u>Or</u>		<u>GEOG 103</u>	<u>D</u>	<u>UG</u>		<u>No</u>

Corequisites

Equivalent Courses

### Restrictions:

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College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for changing the course

Added SLOs and content outline.

Prerequisites removal: as MATH 136 and GEOG/GEOL 310 are not required courses for all concentrations of Geological Sciences program, these prerequisites courses were replaced with GEOL 111 (or GEOG/GEOL 103), which is required for all of our majors. This will make it easy for all our majors to take this course.

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.

Kanita DuCloux in Math was contacted on 2/13/23. No concerns were raised.

Is this course part of No

a program that leads  
to teacher  
certificate?

Are you seeking            No  
Colonnade approval  
for this course?

Student Learning  
Outcomes

#	Student Learning Outcomes
<u>1</u>	<u>Describe scientific methods, different ways that science is conducted, and awareness of natural science and its relevance for our quality of life.</u>
<u>2</u>	<u>Develop an ability and increased capacity to evaluate data quality and experience with fundamental processes of data analysis and interpretation.</u>
<u>3</u>	<u>Demonstrate the ability to develop quantitative, predictive descriptions of the processes by which water moves into and through surface and aquifer flow systems.</u>
<u>4</u>	<u>Demonstrate a capacity to evaluate relationships between water access and quality, human activities, and ecological systems in the context of groundwater systems</u>

Content outline

#	Topic
<u>1</u>	<u>1. Introduction to the nature and scope of hydrogeological sciences</u> <u>2. Processes in the data collection and evaluation of data quality</u> <u>3. Mathematical processes in evaluation of groundwater processes</u> <u>4. Introduction to basics of fluid dynamics</u> <u>5. The hydrologic cycle, with an emphasis on underground water</u> <u>6. Lithologic properties impacting movement of water through earth materials</u> <u>7. Darcy's Law</u> <u>8. Processes in soil water and atmosphere/soil/plant interactions</u> <u>9. Homogeneity/heterogeneity and isotropy/anisotropy</u> <u>10. Processes of and controls on groundwater quality, water/rock interactions</u> <u>11. Introduction to karst hydrogeology</u> <u>12. Human/groundwater interactions</u>

Student  
expectations and  
requirements

Tentative texts and  
course materials

Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

**Leslie North (leslie.north) (02/07/23 9:35 pm):** Rollback: Requested rollback

**Leslie North (leslie.north) (02/09/23 11:56 am):** Rollback: Requested rollback for pre-req change.

**Stuart Burris (stuart.burris) (02/14/23 10:14 am):** Rollback: Proposal has a pre-req deletion in Math, so they will need to be contacted, and the proposal will have to go Full due to pre-req changes impacting other units.

# Course Change Request

Date Submitted: 02/07/23 10:16 pm

Viewing: **GEOL 470 : Tectonics**

Last revision: 02/07/23 10:16 pm

Changes proposed by: nhd42403

## In Workflow

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

Catalog Pages referencing this course

[Department of Earth, Environmental, and Atmospheric Sciences Geology\\_\(GEOL\)](#)

## Proposed Action

## Approval Path

1. 02/10/23 1:00 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Active

## Contact(s)

Name	E-mail	Phone
<a href="#">Nahid Gani</a>	<a href="mailto:nahid.gani@wku.edu">nahid.gani@wku.edu</a>	<a href="tel:270-745-2813">270-745-2813</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GEOL - Geology

Course number 470

Department Geography & Geology

College Science and Engineering

Course title  
Tectonics

Abbreviated course title  
TECTONICS

Course description

A survey of recent and past global tectonic activities and environments, including mantle plumes and processes, rifted continental margins, oceanic ridges, subduction and transform zones, mountain building and landforms, tectonic geomorphology, and interplay between climate and tectonics. Tectonic implications of environmental changes, natural hazards, and natural resources are discussed. ~~Deformational structure and style of various crustal regions. Regional tectonics of North America is emphasized.~~

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 400601 - Geology/Earth Science, General.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		GEOL <u>111</u> <del>308</del>	D	UG		<u>No</u>
<u>Or</u>		<u>GEOL 103</u>	<u>D</u>	<u>UG</u>		<u>No</u>
<u>Or</u>		<u>GEOG 103</u>	<u>D</u>	<u>UG</u>		<u>No</u>

Corequisites

Equivalent Courses

**Restrictions:**

College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for changing the course

Reason for course description revision: Course description was revised to make it more concise and specific to the course contents for better serving students' learning objectives. This description is similar to the graduate section, GEOS 570 because these two courses are often cross-listed.

Reason for prerequisite change: Earlier prerequisite was changed which was only limited to Geological Sciences major. The proposed prerequisite was included to make this course available to the students of our ESGS, GIS, and Meteorology majors in the department.

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

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
<u>1</u>	<u>Develop robust understanding on past and present tectonics of various parts of the globe.</u>
<u>2</u>	<u>Apply cutting-edge tools to measure and interpret tectonic problems related to natural resources, hazards, and human-earth interaction.</u>



#	Student Learning Outcomes
<u>3</u>	<u>Explain tectonic processes in light of earth-system feedback.</u>
<u>4</u>	<u>Demonstrate both oral and written communication skills through critical thinking and evaluation of literature and data relevant to the course topic.</u>

Content outline

#	Topic
<u>1</u>	<u>1. The Interior of the Earth: Crust and Lithosphere</u> <u>2. The Interior of the Earth: Geophysical Techniques</u> <u>3. Continental drifts</u> <u>4. Seafloor Spreading and Transform Faults</u> <u>5. Interior of the Earth - Rheology</u> <u>6. Framework of Plate Tectonics</u> <u>7. Oceanic Ridge</u> <u>8. Continental rifts and rifted margins</u> <u>9. Continental transforms and strike-slip faults</u> <u>10. Subduction Zones</u> <u>11. Orogenic Belt</u> <u>12. Precambrian tectonics and the supercontinent cycle</u> <u>13. Mechanisms of plate tectonics</u> <u>14. Implications of tectonics</u> <u>15. Tectonic Geomorphology</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments



# Course Change Request

Date Submitted: 02/09/23 5:53 pm

Viewing: **GISC 316 : Geographic**

## **Information Systems I ~~Fundamentals of~~ ~~GIS~~**

Last revision: 02/10/23 1:02 pm

Changes proposed by: amy83008

Catalog Pages  
referencing this  
course

[Department of Earth, Environmental, and Atmospheric Sciences](#)  
[Geographic Info Science \(GISC\)](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Amy Nemon</a>	<a href="mailto:amy.nemon@wku.edu">amy.nemon@wku.edu</a>	<a href="tel:270-745-3082">270-745-3082</a>

Review Type [Full Review](#)

Term for  
implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GISC - Geographic Info Science Course number 316

Department Geography & Geology

College Science and Engineering

Course title  
[Geographic Information Systems I](#) ~~Fundamentals of GIS~~

Abbreviated course title [GEOGRAPHIC INFORMATION SYSTEMS](#)  
~~FUNDAMENTALS OF GIS~~

### 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. 02/10/23 1:02 pm  
Leslie North  
(leslie.north):  
Approved for GEO  
Approval

Course description

Geographic Information Science I Introduces spatial thinking with a cross-disciplinary foundation in dealing with spatial/geographical data; their manipulation, analysis, interpretation and use in problem solving. Fundamentals of GIS data management and cartographic design. Includes Topics include data creation, digitizing, database organization, queries map projections, scale and geoprocessing. accuracy. Hands-on work in geospatial data acquisition, base map development, and map production. Note: Permission of instructor may be required.

Credit hours 4

Repeatable

Yes

Number of repeats 2

For maximum credits 4

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Applied Learning

CIP Code 450702 - Geographic Information Science and Cartography.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
	(	GEOG-103	D	UG		
Or		GEOL-103	D	UG		
Or		GEOL-111	D	UG		
Or		METR-121	D	UG	)	
And		GEOG-110	D	UG		

Corequisites

Equivalent Courses

## Restrictions:

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College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for changing the course

Adding Student learning outcomes and outline.

We have a series of four GIS courses in our certificate and have decided to shift around the content between the first two courses, GISC 316 & GISC 317. The reason we are doing this is due to changes within the EEAS majors and minors; we no longer have a major or minor in GIS and some of our majors, Geological Sciences and Meteorology, only require the GISC 316 course for those majors. The content in the current GISC 317 is much more applicable to the skills these students will need within their program of study and future careers therefore we are making these changes to expose students to this material in the GISC 316.

We have decided to change the titles to make clearer to students that the GISC 316 and GISC 317 are sequenced courses. The prerequisites in this course have been dropped to align with the certificate program changes; these same prerequisites were dropped from the certificate program last year. The department is confident that students will be successful beginning this course of study when entering college as well as students that only pursue the certificate program.

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 No

Colonnade approval  
for this course?

Student Learning  
Outcomes

#	Student Learning Outcomes
<u>1</u>	<u>Explain to others what GIS is, what the major components of the technology and typical applications of GIS.</u>
<u>2</u>	<u>Describe the principles of the raster and vector data models and be able to create, modify, analyze, and map data in both forms.</u>
<u>3</u>	<u>Explain the role of topology in the storage and analysis of geographic data.</u>
<u>4</u>	<u>Describe the relationship between attribute and feature data and know how both are stored on disk.</u>
<u>5</u>	<u>Identify, download, and manipulate data into a useable format existing state and national data sets available over the internet.</u>
<u>6</u>	<u>Use GIS analysis tools, including spatial and attribute queries and geographic visualization, to explore a data set and formulate a research question.</u>
<u>7</u>	<u>Use basic vector analysis techniques, including buffering, overlay, and distance measurement, to solve a geographic problem.</u>
<u>8</u>	<u>Describe the role of metadata, topology and file management in data creation.</u>

Content outline

#	Topic
<u>1</u>	<u>File Management</u> <u>History of GIS</u> <u>What is GIS?</u> <u>Modern uses of GIS</u> <u>Intro to Cartographic Design &amp; Map interpretation</u> <u>Geographic Data</u> <u>Vector</u> <u>Raster</u> <u>Creating data</u> <u>editing data</u> <u>metadata</u> <u>survey 123</u> <u>Geodatabase</u> <u>Topology</u> <u>Attribute Queries</u> <u>Spatial Queries</u> <u>Joins and Relates</u> <u>Geoprocessing Tools</u>

#	Topic
	<a href="#"><u>Contour maps</u></a> <a href="#"><u>Animations</u></a> <a href="#"><u>Using Data from online sources</u></a> <a href="#"><u>Publishing maps online</u></a>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

# Course Change Request

Date Submitted: 02/09/23 6:17 pm

## Viewing: **GISC 317 : Geographic Information Systems II**

Last revision: 02/10/23 1:04 pm

Changes proposed by: amy83008

### In Workflow

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

Catalog Pages referencing this course

[Department of Earth, Environmental, and Atmospheric Sciences](#)  
[Department of Earth, Environmental, and Atmospheric Sciences](#)

### Approval Path

1. 02/10/23 1:04 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Amy Nemon</a>	<a href="mailto:amy.nemon@wku.edu">amy.nemon@wku.edu</a>	<a href="tel:270-745-3082">270-745-3082</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GISC - Geographic Info Science Course number 317

Department Geography & Geology

College Science and Engineering

Course title  
Geographic Information Systems II

Abbreviated course title [GIS II](#) ~~GEOGRAPHIC INFORMATION SYSTEMS~~



Course description

Geographic Information Systems II will further explore the ~~The~~ principles, concepts, and applications of GIS. Through case studies, guest speakers, focused autonomous research investigations, students will apply this geospatial technology to solving real-world issues. ~~Topics include raster and vector data models, GIS data sources, data acquisition, storage, management, structured query language, relational databases, GIS analysis, and display.~~ ~~Note: Permission of instructor may be required.~~

Credit hours 4

Repeatable

Yes

Number of repeats 2

For maximum credits 4

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Applied Learning

CIP Code 450702 - Geographic Information Science and Cartography.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		GISC 316	C	UG		

Corequisites

Equivalent Courses

**Restrictions:**

College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for changing the course

Adding Student learning outcomes and outline.

We have a series of four GIS courses in our certificate and have decided to shift around the content between the first two courses, GISC 316 & GISC 317. The reason we are doing this is due to changes within the EEAS majors and minors; we no longer have a major or minor in GIS and some of our majors, Geological Sciences and Meteorology, only require the GISC 316 course for those majors. The content in the current GISC 317 is much more applicable to the skills these students will need within their program of study and future careers therefore we are making these changes to expose students to this material in the GISC 316.

We have decided to change the titles to make clearer to students that the GISC 316 and GISC 317 are sequenced courses. The prerequisites in this course have been dropped to align with the certificate program changes; these same prerequisites were dropped from the certificate program last year. The department is confident that students will be successful beginning this course of study when entering college as well as students that only pursue the certificate program.

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

#	Student Learning Outcomes
<u>1</u>	<u>Demonstrate an understanding of the geographic basis of GIS through correct use of Map projections, coordinate systems, scale, and cartographic generalization for different data sets. To include both vector and raster data.</u>
<u>2</u>	<u>Expand their skills of map reading and interpretation.</u>
<u>3</u>	<u>Describe advanced methods of cartographic perception, design methods, classification, and the applications necessary for them to confidently design their own maps.</u>
<u>4</u>	<u>Demonstrate their skills from GISC 316 in manipulating spatial data students will explore other software options including but not limited to ArcGIS Desktop, ArcGIS Online, Adobe, QGIS, plus a variety of web applications with the opportunity to publish their applications.</u>
<u>5</u>	<u>Evaluate applications in remote sensing to problem solve environmental issues.</u>
<u>6</u>	<u>Students will create their own advanced individual research project evaluating situations in a geographic and spatial context, including data collection, analysis, interpretation, problem solving and communication.</u>

Content outline

#	Topic
<u>1</u>	<u>Explore GIS in variety of Industries</u> <u>ArcGIS Pro</u> <u>ArcGIS Desktop</u> <u>QGIS</u> <u>ArcGIS online</u> <u>Advance Cartographic Design</u> <u>Advanced Map interpretation</u> <u>Data Classification</u> <u>Raster Analysis</u> <u>Remote Sensing introduction</u> <u>Web GIS</u> <u>Story Maps</u> <u>Geocoding</u> <u>Dashboards</u> <u>3D data</u> <u>Individual research projects</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment,  
materials, or library  
resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

# Course Change Request

Date Submitted: 02/14/23 5:42 pm

Viewing: **GISC 418 : Web Applications in GIS Internet GIS**

Last revision: 02/15/23 9:24 pm

Changes proposed by: amy83008

## 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. 02/09/23 1:33 pm  
Leslie North  
(leslie.north):  
Rollback to Initiator
2. 02/09/23 7:46 pm  
Leslie North  
(leslie.north):  
Rollback to Initiator
3. 02/10/23 1:05 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval
4. 02/14/23 10:15 am  
Stuart Burris  
(stuart.burris):  
Rollback to Initiator
5. 02/15/23 9:24 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Catalog Pages  
referencing this  
course

[Department of Earth, Environmental, and Atmospheric Sciences](#)  
[Geographic Info Science \(GISC\)](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
------	--------	-------

Name	E-mail	Phone
<a href="#">Amy Nemon</a>	<a href="mailto:amy.nemon@wku.edu">amy.nemon@wku.edu</a>	<a href="tel:270-745-3082">270-745-3082</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) GISC - Geographic Info Science Course number 418

Department Geography & Geology

College Science and Engineering

Course title

[Web Applications in GIS](#) ~~Internet GIS~~

Abbreviated course title [WEB APPLICATIONS IN GIS](#) ~~INTERNET-GIS~~

#### Course description

Understanding and utilizing different techniques for creating, analyzing, and disseminating GIS data and services via the Internet. Note: Permission of instructor may be required.

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

CIP Code 450701 - Geography.

Does this course have prerequisites

Yes

#### Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		CS-170	C	UG		
And		GIS-417	C	UG		
		<u>GIS 317</u>	<u>C</u>			

Corequisites

Equivalent Courses

**Restrictions:**

---

College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for changing the course

Add Learning Outcomes and Content Outlines

Name change that is more applicable to the techniques being taught.

Improvements in technology have allowed us to drop the two original prerequisite classes to a lower level GIS course.

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.

Stacy Wilson and Guangming Xing contacted on 2/15/23 about change to preprog requirements. No concerns were reported.

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

Are you seeking            No  
Colonnade approval  
for this course?

Student Learning  
Outcomes

#	Student Learning Outcomes
<u>1</u>	<u>Develop Internet and distributable GIS concepts and a working knowledge for disseminating GIS data over the Internet, Intranet and Local Area Network (LAN);</u>
<u>2</u>	<u>Demonstrate competence developing and designing web mapping services in a server-based environment;</u>
<u>3</u>	<u>Analyze, develop and demonstrate skills for deploying, utilizing and managing a centralized GIS.</u>

Content outline

#	Topic
<u>1</u>	<u>Web GIS</u> <u>ArcGIS Online</u> <u>The role of servers</u> <u>Hosted Features</u> <u>creating web mapsStory map</u> <u>ArcGIS Arcade</u> <u>Web App Builder</u> <u>Mobile GIS</u> <u>Survey 123</u> <u>Field Maps</u> <u>Spatialtemporal data</u> <u>Real-time GIS</u> <u>Dashboards</u> <u>Web scenes</u>

Student  
expectations and  
requirements

Tentative texts and  
course materials

Special equipment,  
materials, or library  
resources needed



Additional  
information

Supporting  
documentation

Reviewer Comments

**Leslie North (leslie.north) (02/09/23 1:33 pm):** Rollback: Fix flow from Ex to F

**Leslie North (leslie.north) (02/09/23 7:46 pm):** Rollback: workflow

**Stuart Burris (stuart.burris) (02/14/23 10:15 am):** Rollback: Proposal has pre-re deletion in CS, so they will need to be contacted and results of that contact included in the designated location in the proposal.

---

Key: 4406

# Course Change Request

Date Submitted: 02/14/23 5:42 pm

## Viewing: **GISC 423 : GIS and Location Analytics**

Last revision: 02/14/23 5:42 pm

Changes proposed by: amy83008

Catalog Pages  
referencing this  
course

[Department of Earth, Environmental, and Atmospheric Sciences](#)  
[Geographic Info Science \(GISC\)](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Amy Nemon</a>	<a href="mailto:amy.nemon@wku.edu">amy.nemon@wku.edu</a>	<a href="tel:270-745-3082">270-745-3082</a>

Review Type [Full Review](#)

Term for  
implementation Fall 2023

Academic Level Undergraduate

### 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. 02/10/23 1:05 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval
2. 02/14/23 10:16 am  
Stuart Burris  
(stuart.burris):  
Rollback to Initiator
3. 02/15/23 9:22 pm  
Leslie North  
(leslie.north):  
Approved for GEO Approval

Course prefix (subject area) GISC - Geographic Info Science Course number 423

Department Geography & Geology

College Science and Engineering

Course title  
GIS and Location Analytics

Abbreviated course title GIS & LOCATION ANALYTICS

Course description

Explores selected issues related to location analytics ~~urban applications~~ of GIS. Students will develop applied ~~Developing analytical~~ skills and knowledge in transportation, urban management, locational analysis and business geography. ~~Note: Permission of instructor may be required.~~

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

CIP Code 450701 - Geography.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		GISC 317	C	UG		

Corequisites

Equivalent Courses

## Restrictions:

---

College restriction? No

Field of study  
restriction/major? No

Classification  
restriction? No

Departmental  
Restrictions

Reason for changing  
the course

Adding SLOs and outline. Altering course description to reflect better that location analysis is applicable beyond urban settings.

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
<u>1</u>	<u>Understand the concepts, principles, and processes of selected urban themes</u>
<u>2</u>	<u>Comprehend the nature of different types of geospatial data commonly used in urban applications and locational analysis</u>
<u>3</u>	<u>Develop competency in downloading and processing various Census products</u>

#	Student Learning Outcomes
<u>4</u>	<u>Develop working knowledge of spatial functions supported by a GIS in solving selected urban problems and conducting locational analysis in urban areas.</u>

Content outline

#	Topic
<u>1</u>	<ul style="list-style-type: none"> <li>• <u>Geospatial Analysis Process</u></li> <li>• <u>Urban GIS Applications</u></li> <li>• <u>Common Urban GIS Data</u></li> <li>• <u>Transportation Network</u></li> <li>• <u>Network Analysis</u></li> <li>• <u>U.S. Census</u></li> <li>• <u>Land Suitability Analysis</u></li> <li>• <u>Site Selection</u></li> <li>• <u>Location-Allocation Analysis</u></li> </ul>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

**Stuart Burris (stuart.burris) (02/14/23 10:16 am):** Rollback: Proposal has course description change beyond typos, so it will have to go Full Review.

# Course Change Request

Date Submitted: 02/21/23 11:30 am

Viewing: **ME 220 : Engineering**

## Thermodynamics I

Last revision: 02/21/23 5:22 pm

Changes proposed by: kvn81606

Catalog Pages  
referencing this  
course

[Mechanical Engineering \(ME\)](#)  
[School of Engineering and Applied Sciences](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Kevin Schmaltz</a>	<a href="mailto:kevin.schmaltz@wku.edu">kevin.schmaltz@wku.edu</a>	<a href="tel:2707458859">2707458859</a>

Review Type [Full Review](#)

Term for  
implementation Fall 2023

Academic Level Undergraduate

Course prefix ME - Mechanical Engineering Course number 220  
(subject area)

Department Engineering & Applied Sciences, School of

College Science and Engineering

### 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. 02/17/23 2:56 pm  
Shahnaz Aly  
(shahnaz.aly):  
Rollback to Initiator
2. 02/21/23 4:54 pm  
Shahnaz Aly  
(shahnaz.aly):  
Approved for EAS  
Approval

Course title

Engineering Thermodynamics I

Abbreviated course title ENGINEERING THERMODYNAMICS I

Course description

Fundamental principles of thermodynamics, first law, physical properties, ideal and real gases, second law, reversibility and irreversibility, and consequences of thermodynamic cycles.

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 141901 - Mechanical Engineering.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
	(	EM 221	D	UG		
Or		EM 222	D	UG	)	
And		MATH <u>237</u> <del>334</del>	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

Multivariable calculus (Math237) is the appropriate math competency for the material covered in the initial stages of the Thermo-Fluids sequence, and will be required in the next class (ME330 Fluid Mechanics). Differential equations (Math331) has been removed as a co-requisite, and is being moved to ME330.

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.

Consulted Dr Kanita DuCloux of Mathematics Department on Feb 17  
This course is only taken by ME students. The prerequisite changes do not impact any courses that ME students must take.

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
<u>1</u>	<u>Explain the terminology and principles of thermodynamics and energy systems</u>
<u>2</u>	<u>Apply equations of state for pure substances</u>



#	Student Learning Outcomes
<u>3</u>	<u>Apply the first law of thermodynamics to solve closed system and control volume (open system) problems</u>
<u>4</u>	<u>Explain the statements of the second law of thermodynamics and use the second law of thermodynamics to predict system efficiency</u>
<u>5</u>	<u>Describe the characteristics of typical Gas, Vapor and Combined Power Cycles, calculate their efficiency, and apply their concepts to practical engineering problems</u>
<u>6</u>	<u>Use empirical data in the form of tables and figures to solve open-ended thermodynamic problems</u>

#### Content outline

#	Topic
<u>1</u>	<u>• Introduction, Definitions, Units, Systems</u>
<u>2</u>	<u>• Properties, State, Processes, Cycles, State Postulate, Temperature, Pressure</u>
<u>3</u>	<u>• Energy: Heat Transfer, Work, and Mechanical</u>
<u>4</u>	<u>• The First Law of Thermodynamics</u>
<u>5</u>	<u>• Pure Substance, Phase-Change process, Property Diagrams, Thermodynamic Property Tables</u>
<u>6</u>	<u>• The Ideal-Gas Equation of State; Compressibility Factor, Other Equations of State</u>
<u>7</u>	<u>• Moving Boundary Work</u>
<u>8</u>	<u>• Energy Balance for Closed Systems</u>
<u>9</u>	<u>• Specific Heats; Internal Energy, Enthalpy, Specific Heats for Ideal Gases, Solids and Liquids</u>
<u>10</u>	<u>• Conservation of Mass; Flow Work and the Energy of a Flowing Fluid</u>
<u>11</u>	<u>• Energy Analysis for Steady-Flow Systems</u>
<u>12</u>	<u>• Nozzles, Diffusers, Turbines, Compressors, Throttling valves, Mixing chambers Heat exchangers, Pipe flow</u>
<u>13</u>	<u>• Introduction to the Second law, Thermal Reservoirs</u>
<u>14</u>	<u>• Heat Engines, Refrigerators and Heat Pumps</u>
<u>15</u>	<u>• Reversible &amp; Irreversible Processes, Carnot cycle; Carnot Principles</u>
<u>16</u>	<u>• The Thermodynamic Temperature Scale</u>
<u>17</u>	<u>• Carnot Heat Engine, Refrigerator and Heat Pump</u>
<u>18</u>	<u>• Entropy, Entropy Change of Pure Substance, Isentropic Processes</u>
<u>19</u>	<u>• Property Diagrams Involving Entropy, T ds Relations, Entropy Change of Liquids and Solids and Ideal Gases</u>
<u>20</u>	<u>• Reversible Steady-Flow Work</u>

#	Topic
<u>21</u>	• <u>Isentropic Efficiencies of Steady-Flow Devices</u>
<u>22</u>	• <u>Basic Considerations in the Analysis of Power Cycles; Air Standard Assumptions</u>
<u>23</u>	• <u>An Overview of Reciprocating Engines</u>
<u>24</u>	• <u>Otto Cycle: The Ideal Cycle for Spark-Ignition Engines</u>
<u>25</u>	• <u>Diesel Cycle: The Ideal Cycle for Compression- Ignition Engines</u>
<u>26</u>	• <u>Brayton Cycle: The Ideal Cycle for Gas Turbine Engines; Modifications to the Brayton Cycle</u>
<u>27</u>	• <u>Rankine Cycle: The Ideal Cycle for Vapor Power Cycles</u>
<u>28</u>	• <u>Deviation of Actual Vapor Power Cycles From Idealized Ones</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

**Shahnaz Aly (shahnaz.aly) (02/17/23 2:56 pm):** Rollback: Update Learning Outcomes

# Course Change Request

Date Submitted: 02/21/23 11:02 am

## Viewing: **ME 240 : Materials and Methods of Manufacturing**

Last revision: 02/21/23 5:25 pm

Changes proposed by: kvn81606

### In Workflow

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

Catalog Pages referencing this course

[Mechanical Engineering \(ME\)](#)  
[School of Engineering and Applied Sciences](#)

### Approval Path

1. 02/17/23 2:57 pm  
Shahnaz Aly (shahnaz.aly):  
Rollback to Initiator
2. 02/21/23 4:54 pm  
Shahnaz Aly (shahnaz.aly):  
Approved for EAS Approval

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Kevin Schmaltz</a>	<a href="mailto:kevin.schmaltz@wku.edu">kevin.schmaltz@wku.edu</a>	<a href="tel:2707458859">2707458859</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) ME - Mechanical Engineering Course number 240

Department Engineering & Applied Sciences, School of

College Science and Engineering

Course title

Materials and Methods of Manufacturing

Abbreviated course title MATERIALS/METHODS MANUFACTURI

Course description

Introduction to the science of engineering materials including structures from the atomic to macroscopic scales, properties, strengthening mechanisms, phase diagrams, and correlation between processing and properties. Introduction to manufacturing process selection and properties of materials.

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 141901 - Mechanical Engineering.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		MATH 136	<u>D</u> <del>E</del>	UG		
And	(	CHEM 116	C	UG		
Or		CHEM 120	C	UG	)	

Corequisites

ME 241 - Materials and Methods of Manufacturing Lab

Equivalent Courses

## Restrictions:

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College restriction? No

Field of study  
restriction/major? No

Classification  
restriction? No

Departmental  
Restrictions

Reason for changing  
the course

Initial exposure to calculus (Math136) with a passing grade is the appropriate math competency for the material covered in the course. ME students will still be required to earn a "C" or better in Math136 to take Math137.

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.

Dr Kanita DuCloux of Mathematics Department was consulted on Feb 17.

This course is typically taken by ME students. The prerequisite grade requirement change does not impact any courses that ME students must take.

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
<u>1</u>	<u>Identify relationships between atomic bond types and material properties</u>
<u>2</u>	<u>Identify relationships between micro-structures and material properties</u>

#	Student Learning Outcomes
<u>3</u>	<u>Characterize the solid phases present in an alloy</u>
<u>4</u>	<u>Determine the influence of heat treatment on alloy properties</u>
<u>5</u>	<u>Characterize the influence of temperature and time related to heat treatments</u>
<u>6</u>	<u>Identify the properties unique to metals, polymers and ceramics</u>
<u>7</u>	<u>Identify relationships between shaping processes and material properties</u>
<u>8</u>	<u>Acquire familiarity with common manufacturing processes</u>

Content outline

#	Topic
<u>1</u>	<u>• Atomic structure and bonding</u>
<u>2</u>	<u>• Crystal structures</u>
<u>3</u>	<u>• Dislocations and plastic deformation</u>
<u>4</u>	<u>• Strengthening mechanisms and processes</u>
<u>5</u>	<u>• Physical and mechanical properties</u>
<u>6</u>	<u>• Diffusion in solids</u>
<u>7</u>	<u>• Phase changes and phase diagrams</u>
<u>8</u>	<u>• Metals, polymers and ceramics</u>
<u>9</u>	<u>• Heat treatment of steel</u>
<u>10</u>	<u>• Ferrous and non-ferrous alloys</u>
<u>11</u>	<u>• Casting processes in manufacturing</u>
<u>12</u>	<u>• Forming processes in manufacturing</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional  
information

Supporting  
documentation

Reviewer Comments

**Shahnaz Aly (shahnaz.aly) (02/17/23 2:57 pm):** Rollback: Math requirement

Key: 5922

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# Course Change Request

Date Submitted: 02/21/23 10:56 am

## Viewing: **ME 325 : Elements of Heat Transfer**

Last revision: 02/21/23 5:26 pm

Changes proposed by: kvn81606

Catalog Pages  
referencing this  
course

[Mechanical Engineering \(ME\)](#)  
[School of Engineering and Applied Sciences](#)

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Kevin Schmaltz</a>	<a href="mailto:kevin.schmaltz@wku.edu">kevin.schmaltz@wku.edu</a>	<a href="tel:2707458859">2707458859</a>

Review Type [Full Review](#)

Term for implementation Fall 2023

Academic Level Undergraduate

Course prefix (subject area) ME - Mechanical Engineering Course number 325

Department Engineering & Applied Sciences, School of

College Science and Engineering

### 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. 02/17/23 2:58 pm  
Shahnaz Aly  
(shahnaz.aly):  
Rollback to Initiator
2. 02/21/23 4:54 pm  
Shahnaz Aly  
(shahnaz.aly):  
Approved for EAS  
Approval



Course title

Elements of Heat Transfer

Abbreviated course title      ELEMENTS OF HEAT TRANSFER

Course description

Discussion of basic physical laws of heat transfer including steady-state and transient heat flow; one-,two-and three-dimensional heat conduction in solids, free or forced convection in fluids, radiation and phase change. Analysis of heat exchangers.

Credit hours                      4

Repeatable

Yes

Number of repeats              2

For maximum credits              4

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                      141901 - Mechanical Engineering.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		ME 330	D	UG		
<u>And</u>		<u>MATH 331</u>	<u>D</u>	<u>UG</u>		

Corequisites

~~ME 333 - Thermo-Fluids Laboratory~~

Equivalent Courses

**Restrictions:**

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

Reason for changing the course

Differential equations (Math331) is the required math competency for the material covered in the course. The co-requisite was removed from an earlier Thermo-Fluids class (ME220 Thermodynamics I) and is now being added to ME325. The ME333 lab is being removed from the ME program, so it is removed as a co-requisite for ME325.

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.

Dr Kanita DuCloux of Mathematics Department was consulted on Feb 17.  
This course is only taken by ME students. The prerequisite changes do not impact any courses that ME students must take.

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
<u>1</u>	<u>Recognize the relevant modes for given heat transfer problems.</u>
<u>2</u>	<u>Use analytical, experimental and numerical techniques with the heat conduction equation to analyze steady and unsteady conduction problems.</u>

#	Student Learning Outcomes
<u>3</u>	<u>Use analytical and empirical techniques to solve forced and free convection problems; analyze and determine sizes for heat exchangers.</u>
<u>4</u>	<u>Use analytical techniques to solve radiation heat transfer problems.</u>
<u>5</u>	<u>Use analytical techniques to solve combined heat and mass transfer problems.</u>

Content outline

#	Topic
<u>1</u>	• <u>Steady-State Conduction (One dimension Resistance Networks; Multi-dimensional conduction; Insulation and R values)</u>
<u>2</u>	• <u>Transient Conduction (Lumped heat capacity system; Heisler charts; Multi-dimensional systems)</u>
<u>3</u>	• <u>Forced-Convection Heat Transfer (Boundary layers, laminar and turbulent flow; Flow over flat plates; cylinders and spheres, pipe and tube flow)</u>
<u>4</u>	• <u>Natural-Convection Systems (Free Convection)</u>
<u>5</u>	• <u>Radiation Heat Transfer (Physical mechanisms; Blackbody radiation; view factors; Network analysis for black and gray surfaces)</u>
<u>6</u>	• <u>Heat Exchangers (Types; LMTD and Effectiveness-NTU Methods)</u>
<u>7</u>	• <u>Mass Transfer Introduction</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

**Shahnaz Aly (shahnaz.aly) (02/17/23 2:58 pm):** Rollback: Math Requirement



# Course Change Request

Date Submitted: 02/21/23 10:51 am

Viewing: **ME 330 : Fluid Mechanics**

Last revision: 02/21/23 12:34 pm

Changes proposed by: kvn81606

## In Workflow

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

Catalog Pages referencing this course

[Mechanical Engineering \(ME\)](#)  
[School of Engineering and Applied Sciences](#)

## Proposed Action

## Approval Path

1. 02/17/23 2:58 pm  
Shahnaz Aly  
(shahnaz.aly):  
Rollback to Initiator
2. 02/21/23 10:51 am  
Shahnaz Aly  
(shahnaz.aly):  
Approved for EAS Approval

Active

## Contact(s)

Name	E-mail	Phone
<a href="#">Kevin Schmaltz</a>	<a href="mailto:kevin.schmaltz@wku.edu">kevin.schmaltz@wku.edu</a>	<a href="tel:2707458859">2707458859</a>

Review Type [Full Review](#)

Term for implementation Spring 2024

Academic Level Undergraduate

Course prefix (subject area) ME - Mechanical Engineering Course number 330

Department Engineering & Applied Sciences, School of

College Science and Engineering

Course title

Fluid Mechanics

Abbreviated course title FLUID MECHANICS

Course description

An introduction of physical laws governing the mechanical behavior of liquids and gasses, with applications of conservation of mass, energy and momentum equations. Topics include fluid statics, internal and external fluid flow, flow measurement, scale modeling and similtude, hydraulic machinery analysis and pipe networks.

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 141901 - Mechanical Engineering.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		ME 220	C	UG		No
And		MATH 331	D	UG		<u>Yes</u>
And		MATH 237	D	UG		No

Corequisites

[ME 332 - Fluid Mechanics Laboratory](#)

Equivalent Courses

## Restrictions:

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College restriction? No

Field of study  
restriction/major? No

Classification  
restriction? No

Departmental  
Restrictions

Reason for changing  
the course

Multivariable calculus (Math237) is the required math competency for the material covered in the course. Students need an initial familiarity with differential equations (Math331) in this course, and this will be a prerequisite for the following Thermo-Fluids course, ME325.

The ME332 lab has been added to the ME program and is now a co-requisite for this course.

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.

Dr Kanita DuCloux of the Mathematics Department has been consulted (Feb. 17)

This course is only taken by ME students. The prerequisite changes do not impact any courses that ME students must take.

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

#	Student Learning Outcomes
<u>1</u>	<u>Analyze forces and pressures for static fluid problems.</u>
<u>2</u>	<u>Recognize and apply appropriate conservation equations to analyze steady flow fluid problems.</u>
<u>3</u>	<u>Analyze steady state and transient fluid behavior using energy and momentum equations to determine forces and velocities.</u>
<u>4</u>	<u>Perform similitude and dimensional analysis.</u>
<u>5</u>	<u>Determine internal (pipe flow) and external (boundary layer) flow solutions.</u>
<u>6</u>	<u>Describe the operation of pressure and flow measurement devices.</u>
<u>7</u>	<u>Analyze and determine sizes for hydraulic machinery (such as pumps, turbines).</u>

#### Content outline

#	Topic
<u>1</u>	<u>• Introduction and Basic Concepts</u>
<u>2</u>	<u>• Properties of Fluid</u>
<u>3</u>	<u>• Viscosity</u>
<u>4</u>	<u>• Pressure, Fluid Statics</u>
<u>5</u>	<u>• Pressure Measurement Devices, Manometers</u>
<u>6</u>	<u>• Hydrostatic Forces on Planar Surfaces</u>
<u>7</u>	<u>• Hydrostatic Forces on Curved Surfaces</u>
<u>8</u>	<u>• Buoyancy and Stability</u>
<u>9</u>	<u>• Reynolds Transport Theorem; Conservation Laws</u>
<u>10</u>	<u>• Introduction; Conservation of Mass</u>
<u>11</u>	<u>• Bernoulli Equation; Applications, General Energy</u>
<u>12</u>	<u>• Equation; Conservation of Energy</u>
<u>13</u>	<u>• Energy Analysis of Steady Flows</u>
<u>14</u>	<u>• Newton's Laws; Conservation of Linear Momentum</u>
<u>15</u>	<u>• Conservation of Angular Momentum</u>
<u>16</u>	<u>• Dimensions and Units; Homogeneity; Dimensional Analysis</u>
<u>17</u>	<u>• Buckingham Pi Theorem</u>
<u>18</u>	<u>• Similitude and Modeling</u>
<u>19</u>	<u>• Laminar and Turbulent Flow Introduction; Entrance Region,</u>
<u>20</u>	<u>• Laminar Pipe Flow</u>



#	Topic
<u>21</u>	• <u>Turbulent Pipe Flow</u>
<u>22</u>	• <u>Minor Losses, Pipe Networks</u>
<u>23</u>	• <u>Flow Rate and Velocity Measurement</u>
<u>24</u>	• <u>Differential Formulations Introduction</u>
<u>25</u>	• <u>Conservation of Mass – The Continuity Equation</u>
<u>26</u>	• <u>Conservation of Linear Momentum – Cauchy’s Equation</u>
<u>27</u>	• <u>Differential Analysis of Fluid Flow Problems</u>
<u>28</u>	• <u>Classification and Terminology</u>
<u>29</u>	• <u>Pump Performance, Operating Characteristics</u>
<u>30</u>	• <u>Pump Scaling Laws</u>
<u>31</u>	• <u>Introduction; Drag and Lift</u>
<u>32</u>	• <u>Friction and Pressure Drag</u>
<u>33</u>	• <u>Drag Coefficients of Common Geometries</u>
<u>34</u>	• <u>The Boundary Layer Approximation</u>
<u>35</u>	• <u>Parallel Flow over Flat Plates</u>
<u>36</u>	• <u>Flow over Cylinder and Spheres, Lift</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

**Shahnaz Aly (shahnaz.ali) (02/17/23 2:58 pm):** Rollback: Math Requirement

Key: 5929

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# Course Change Request

Date Submitted: 02/22/23 9:05 am

Viewing: **ME 332 : Fluid Mechanics  
Laboratory**

Last revision: 02/22/23 10:46 am

Changes proposed by: kvn81606

## In Workflow

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

Catalog Pages  
referencing this  
course

[Mechanical Engineering \(ME\)](#)  
[School of Engineering and Applied Sciences](#)

## Approval Path

1. 02/21/23 10:52 am  
Shahnaz Aly  
(shahnaz.aly):  
Approved for EAS  
Approval
2. 02/21/23 12:38 pm  
Stuart Burris  
(stuart.burris):  
Rollback to Initiator
3. 02/21/23 4:52 pm  
Shahnaz Aly  
(shahnaz.aly):  
Rollback to Initiator
4. 02/22/23 10:36 am  
Shahnaz Aly  
(shahnaz.aly):  
Approved for EAS  
Approval

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
<a href="#">Kevin Schmaltz</a>	<a href="mailto:kevin.schmaltz@wku.edu">kevin.schmaltz@wku.edu</a>	<a href="tel:2707458859">2707458859</a>

Review Type [Full Review](#)

Term for implementation Spring 2024

Academic Level Undergraduate

Course prefix (subject area) ME - Mechanical Engineering Course number 332

Department Engineering & Applied Sciences, School of

College Science and Engineering

Course title  
Fluid Mechanics Laboratory

Abbreviated course title FLUID MECHANICS LABORATORY

Course description

An applied laboratory in the modeling, prediction, and measurement of fluid mechanics components and systems, with emphasis on the preparation of engineering reports, uncertainty analysis, and the experimental design plan process. System level experiments include fluid property measurements, pipe flow and turbomachinery characteristics.

Credit hours 1

Repeatable

Yes

Number of repeats 2

For maximum credits 1

Default grade type Standard Letter Alternate grade type(s)

Is this course intended to span more than one term?

No

Schedule type

Lab

CIP Code 141901 - Mechanical Engineering.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
--------	---	------------------	-----------------	----------------	---	--------------

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
		MATH 331	D	UG		
And		ME 220	C	UG		
And		MATH 237	D	UG		
And		ME 310	D	UG		

Corequisites

ME 330 - Fluid Mechanics

Equivalent Courses

**Restrictions:**

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College restriction? No

Field of study restriction/major? No

Classification restriction? No

Departmental Restrictions

Reason for changing the course

This lab course is being reactivated to replace ME333 (Heat Transfer and Fluids lab). The ME333 lab was heavily weighted towards Fluid Mechanics topics. This lab material would be more effectively covered in conjunction with the Fluid Mechanics class, and ME332 lab must be taken concurrently with ME330 Fluid Mechanics. It must be taken after ME310 (Instrumentation). The heat transfer content of the ME333 lab will be covered as demonstration and class project activities within the ME325 Heat Transfer class. All ME332 math requirements are captured in the ME330 class requirements.

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.

Dr Kanita DuCloux of the Mathematics Department was informed of this lab reactivation and adjustments to math requirements in ME330 class on February 17, although there are no explicit math requirements in ME332. This course is only taken by ME students. The prerequisite changes do not impact any courses that ME students must take.

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
<u>1</u>	<u>Evaluate and apply methods of experimental measurement for thermal-fluid systems.</u>
<u>2</u>	<u>Document experimental results through clear, concise lab reports.</u>
<u>3</u>	<u>Provide an accurate evaluation of the uncertainty of experimental results.</u>
<u>4</u>	<u>Perform effectively as team members.</u>

Content outline

#	Topic
<u>1</u>	<u>• Experimental Planning</u>
<u>2</u>	<u>• Methods of Measurement</u>
<u>3</u>	<u>• Selection of Instrumentation</u>
<u>4</u>	<u>• Prediction of Uncertainty</u>
<u>5</u>	<u>• Analysis of Data and Results</u>
<u>6</u>	<u>• Estimation of Error</u>
<u>7</u>	<u>• Reporting of Experimental Results</u>
<u>8</u>	<u>• Bernoulli Test Bed – Conservation of Energy</u>
<u>9</u>	<u>• Impact of a Jet – Momentum Transfer</u>
<u>10</u>	<u>• Hydrostatic Forces on Planar and Curved Surfaces</u>

#	Topic
<u>11</u>	• <u>Viscous Internal Flow – Laminar and Turbulent Regimes</u>
<u>12</u>	• <u>Pump Characteristics and Similarity</u>
<u>13</u>	• <u>Wind Tunnel (External Flow) - Lift and Drag Forces</u>

Student expectations and requirements

Tentative texts and course materials

Special equipment, materials, or library resources needed

Additional information

Supporting documentation

Reviewer Comments

**Stuart Burris (stuart.burris) (02/21/23 12:38 pm):** Rollback: This proposal involved pre-req changes with courses outside SEAS. It will need to go through full review and MATH will need to be contacted for comment/concerns.

**Shahnaz Aly (shahnaz.aly) (02/21/23 4:52 pm):** Rollback: Change to full review

# Program Change Request

Date Submitted: 02/21/23 12:34 pm

Viewing: **543P, 543 : Mechanical**

## Engineering, Bachelor of Science

Last approved: 09/27/21 11:29 am

Last edit: 02/21/23 12:34 pm

Changes proposed by: kvn81606

Catalog Pages  
Using this Program

[Mechanical Engineering, Bachelor of Science \(543P, 543\)](#)

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. 02/14/23 2:55 pm  
Shahnaz Aly  
(shahnaz.aly):  
Rollback to Initiator
2. 02/17/23 2:54 pm  
Shahnaz Aly  
(shahnaz.aly):  
Rollback to Initiator
3. 02/21/23 4:54 pm  
Shahnaz Aly  
(shahnaz.aly):  
Approved for EAS Approval

### History

1. Jan 26, 2021 by  
Jessica Dorris  
(jessica.dorris)
2. May 26, 2021 by  
Rheanna Plemons  
(rheanna.plemons)
3. Jun 16, 2021 by  
Jessica Dorris  
(jessica.dorris)
4. Sep 27, 2021 by  
Jennifer Hammonds



Active

Contact Person

Name	Email	Phone
Kevin Schmaltz	kevin.schmaltz@wku.edu	2707458859

Term of Implementation 2023-2024

Program Reference Number 543P, 543

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) Mechanical Engineering, Bachelor of Science

Will this program have concentrations?  
No

CIP Code 14.1901 - Mechanical Engineering.

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

## Catalog Content

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Program Overview (Catalog field: Overview tab)

Mechanical engineers are involved in designing and building almost everything that is needed in our modern world, from nearly invisible electro-mechanical devices to enormous power generating and distribution systems producing millions of horsepower. Mechanical engineers use scientific principles from the physical world to create a tremendous variety of mechanical and thermal systems. Practicing mechanical engineers use these principles to design, analyze, manufacture, and maintain systems that include:

automobiles and aircraft

heating and cooling systems

electric power plants

specialized materials

manufacturing plants

industrial equipment and machinery

Mechanical engineers need a solid understanding of engineering science, which includes mechanics, engineering materials, thermodynamics and fluid mechanics. The program at WKU focuses on these sciences as well as design and professional skills necessary for a successful career in mechanical engineering. Our graduates have a strong competitive advantage with their unique background of engineering fundamentals combined with practical knowledge and experience. The mechanical engineering program provides a project-based, learner-driven environment relevant to the needs of modern society. In support of this learning environment, the professional engineering activities of the faculty create opportunities for the students to practice the art and science of contemporary Mechanical Engineering. The curriculum requires a minimum of 60.5 technical specialty hours, completion of required Colonnade coursework, and 32-33 semester hours of required mathematics and science.

The WKU Mechanical Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

## **Mechanical Engineering Program Educational Objectives**

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The mission is achieved by focusing on specific program educational objectives. Within a few years of completing the Mechanical Engineering Program, a graduate will:

**Objective 1:** Either be contributing to their regions' economic development through employment in mechanical engineering or related professions, or pursuing advanced credentials.

**Objective 2:** Occupy leadership roles in their profession, or in their communities, as their career develops

**Objective 3:** Demonstrate professionalism on diverse teams across a range of varied responsibilities

**Objective 4:** Be proactive in their professional development and engage in the continuing education needed to maintain and enhance their career.

For detailed information on the mechanical engineering program, please see the "Mechanical Engineering Program Guide" (available at <http://wku.edu/seas> ) and/or contact your advisor.

Curriculum Requirements (Catalog field: Program Requirements)

## **Program Requirements (60.5 hours)**

Approved Shared Content from /shared/undergraduate-major-requirements/

Last Approved: Jul 6, 2022 10:48am

A baccalaureate degree requires a minimum of 120 unduplicated semester hours. More information can be found at

[www.wku.edu/registrar/degree\\_certification.php](http://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>

## Academic Standards for the Mechanical Engineering Program

Students are admitted as a Pre-Major in Mechanical Engineering. In order to transition from Pre-Major to Major and to graduate with a degree in Mechanical Engineering, student must satisfy the requirements below. All courses below must have a grade of "C" or better.

College Composition (F-W1)		3
Human Communications (F-OC)		3
<a href="#">MATH 136</a>	Calculus I (or equivalent credit)	4
<a href="#">MATH 137</a>	Calculus II (or equivalent credit)	4
<a href="#">PHYS 255</a> & <a href="#">PHYS 256</a>	University Physics I and University Physics I Lab	5
Select one of the following:		4-5
<a href="#">CHEM 116</a> & <a href="#">CHEM 106</a>	Introduction to College Chemistry and Fundamentals of General Chemistry Laboratory	
<a href="#">CHEM 120</a> & <a href="#">CHEM 121</a>	College Chemistry I and College Chemistry I Laboratory	
<a href="#">EM 222</a>	Statics	3
Total Hours		26-27

These pre-major eligibility requirements MUST be completed before enrolling in [ME 200](#): Sophomore Design. Check degree audit for progress towards meeting these requirements.

## Program Requirements

<a href="#">ME 176</a>	Mechanical Engineering Freshman Design	1
<a href="#">ME 180</a>	Freshman Design II	3
<a href="#">ME 200</a>	Sophomore Design	3
<a href="#">ME 220</a>	Engineering Thermodynamics I	3
<a href="#">ME 240</a>	Materials and Methods of Manufacturing	3
<a href="#">ME 241</a>	Materials and Methods of Manufacturing Lab	1
<a href="#">ME 300</a>	<del>Junior Design</del>	<del>2</del>
<a href="#">ME 310</a>	Engineering Instrumentation and Experimentation	3
<a href="#">ME 325</a>	Elements of Heat Transfer	4
<a href="#">ME 330</a>	Fluid Mechanics	3
<a href="#">ME 333</a>	<del>Thermo-Fluids Laboratory</del>	<del>4</del>

<u>ME 344</u>	Mechanical Design	3
<u>ME 332</u>	<u>Fluid Mechanics Laboratory</u>	<u>1</u>
<u>ME 347</u>	Mechanical Systems Laboratory	1
<u>ME 400</u>	<del>Mechanical Engineering Design</del>	<del>2</del>
<del>or ENGR 490</del>	<del>Senior Project I</del>	
<u>ME 412</u>	<del>Mechanical Engineering Senior Project</del>	<del>3</del>
<del>or ENGR 491</del>	<del>Senior Project II</del>	
<u>ENGR 490</u>	<u>Senior Project 1</u>	<u>2</u>
<u>ENGR 491</u>	<u>Senior Project II</u>	<u>3</u>
<u>EE 210</u>	Circuits & Networks I	3.5
<u>EM 222</u>	Statics	3
<u>EM 303</u>	Mechanics of Deformable Solids	3
<u>EM 313</u>	Dynamics	3
<b>Mechanical Engineering Technical Electives</b>		<b>12</b>
Choose from the following list:		
<u>ME 494</u>	WKU ME Selected Topics	
<u>ME 495</u>	WKU ME Selected Projects	
<u>ME 496</u>	WKU – ME Selected Topics (Fall)	
<u>ME 497</u>	WKU – ME Selected Topics (Spring)	
<u>ME 498</u>	UK – ME Selected Topics (Fall)	
<u>ME 499</u>	UK – ME Selected Topics (Spring)	
<u>ENGR 360</u>	System Dynamics and Modeling	
<u>ENGR 400</u>	Principles of Systems Engineering	
<u>EE 460</u>	Continuous Control Systems	
<u>ME 321</u>	Engineering Thermodynamics II	
<u>PHYS 318</u>	Data Acquisition Using Labview	
Total Hours		58.5
<b>Additional Required Courses</b>		
<u>MATH 136</u>	Calculus I	4
<u>MATH 137</u>	Calculus II	4
<u>MATH 237</u>	Multivariable Calculus	4
<u>MATH 331</u>	Differential Equations	3

<a href="#">PHYS 255</a> & <a href="#">PHYS 256</a>	University Physics I and University Physics I Lab	5
<a href="#">PHYS 265</a> & <a href="#">PHYS 266</a>	University Physics II and University Physics II Laboratory	5
<a href="#">CHEM 120</a> & <a href="#">CHEM 121</a>	College Chemistry I and College Chemistry I Laboratory	5
or <a href="#">CHEM 116</a>	Introduction to College Chemistry	
or <a href="#">CHEM 106</a>	Fundamentals of General Chemistry Laboratory	

**Math and Science Elective** **3**

Each mechanical engineering student must also take at least one mathematics / science elective, for a total of a minimum of 32 hours of mathematics and science courses beginning with [MATH 136](#). This elective must be chosen from the following list:

<a href="#">ASTR 214</a>	General Astronomy	
<a href="#">BIOL 120</a> & <a href="#">BIOL 121</a>	Biological Concepts: Cells Metabolism and Genetics and Biological Concepts: Cells, Metabolism, and Genetics Lab	
<a href="#">BIOL 122</a> & <a href="#">BIOL 123</a>	Biological Concepts: Evolution, Diversity, and Ecology and Biological Concepts: Evolution, Diversity, and Ecology Lab	
<a href="#">BIOL 207</a>	General Microbiology	
<a href="#">CHEM 222</a> & <a href="#">CHEM 223</a>	College Chemistry II and College Chemistry II Laboratory	
<a href="#">PHYS 316</a>	Computational Physics	
<a href="#">PHYS 318</a>	Data Acquisition Using Labview	
<a href="#">MATH 305</a>	Introduction to Mathematical Modeling	
<a href="#">MATH 307</a>	Introduction to Linear Algebra	
<a href="#">MATH 310</a>	Introduction to Discrete Mathematics	
<a href="#">MATH 370</a>	Applied Techniques in Mathematics	
<a href="#">STAT 301</a>	Introductory Probability and Applied Statistics	

Total Hours 33

Students must complete a minimum of 32 hours of mathematics and science courses beginning with [MATH 136](#). Student must also satisfy the WKU Colonnade requirements.

4-Year Plan

## Finish in Four Plan

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First Year

Fall	Hours	Spring	Hours
<a href="#">ME 176</a>	1	<a href="#">ME 180</a>	3

First Year

Fall	Hours	Spring	Hours
<u>MATH 136</u>	4	<u>MATH 137</u>	4
<u>CHEM 116</u>	4	<u>PHYS 255</u>	4
& <u>CHEM 106</u> (or CHEM 120/121)			
<u>ENG 100</u>	3	<u>PHYS 256</u>	1
<u>COMM 145</u>	3	<u>EM 222</u>	3
	15		15

Second Year

Fall	Hours	Spring	Hours
<u>ME 240</u>	3	<u>ME 200</u>	3
<u>ME 241</u>	1	<u>MATH 331</u>	3
<u>MATH 237</u>	4	<u>EM 303</u>	3
<u>PHYS 265</u>	4	<u>EE 210</u>	3.5
<u>PHYS 266</u>	1	<u>ENG 200</u>	3
<u>HIST 101</u> or <u>HIST 102</u>	3		
	16		15.5

Third Year

Fall	Hours	Spring	Hours
<u>ME 220</u>	3	<u>ME 300</u>	<del>2</del>
<u>EM 313</u>	<del>3</del>	<u>ME 310</u>	<del>3</del>
<u>ME 344</u>	3	<u>ME 347</u>	<del>4</del>
<u>ME 310</u>	<u>3</u>	<u>EM 313</u>	<u>3</u>
<u>ME 347</u>	<u>1</u>	<u>ME 330</u>	3
Math/Science Elective	3	<u>ME 332</u>	<u>1</u>
Colonnade - Arts & Humanities	3	ME Technical Elective	3
		<u>ME 497</u>	<u>3</u>
		Colonnade - Social & Behavioral	3
	16		16

Fourth Year

Fall	Hours	Spring	Hours
<u>ME 325</u>	4	<u>ME 412</u> or <u>ENGR 491</u>	<del>3</del>
<u>ME 333</u>	<del>4</del>	<u>ENGR 491</u>	<u>3</u>
<u>ME 400</u> or <u>ENGR 490</u>	<del>2</del>	ME Technical Elective	3
<u>ENGR 490</u>	<u>2</u>	ME Technical Elective	3
ME Technical Elective	3	Colonnade - Local to Global	3
Colonnade - Social & Cultural	3	Colonnade - Systems	3
<u>ENG 300</u>	3		
	15		15

Total Hours 123.5

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

No

Does this program include courses from outside your department?



Please insert one Learning Outcome per box. Click green plus sign for additional LO boxes

Learning Outcomes  
and Measurement  
Plan

	List all student learning outcomes of the program.	Measurement Plan
SLO 1	<u>Ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. (ABET #1)</u> <del>Department requested that 4-year plan be updated. Admin update on 1/26/2021.</del>	<u>Material is collected and assessed from specific classes using a rubric. A senior exit survey is conducted to ask student to rate their perception of attainment of outcome. Average grades in relevant courses.</u> <del>Department requested that 4-year plan be updated. Admin update on 1/26/2021.</del>
<u>SLO 2</u>	<u>Ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. (ABET #4)</u>	<u>Material is collected and assessed from specific classes using a rubric. A senior exit survey is conducted to ask student to rate their perception of attainment of outcome.</u>
<u>SLO 3</u>	<u>Graduates have an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. (ABET #5)</u>	<u>Results from the Comprehensive Assessment of Team Member Effectiveness (CATME) is evaluated. Material is collected and assessed from specific classes using a rubric. A senior exit survey is conducted to ask student to rate their perception of attainment of outcome.</u>

## Delivery Mode

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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

See the SACSCOC Policy on Direct Assessment Competency-based Educational Programs.

<https://www.sacscoc.org/pdf/081705/DirectAssessmentCompetencyBased.pdf>

## Library Resources

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Attach library  
resources

Rationale for the program proposal?

One required course (ME300) will be replaced with an increase in required technical electives from 4 to 5. One required lab (ME333) will be replaced with a currently suspended lab (ME332). The net change is one added hour to the curriculum. See attached.

ENGR490 replaces ME400 and ENGR491 replaces ME412. The ENGR course numbering has been used for several years and ME400/412 are no longer used.

Additional [ME Curriculum revisions justification.pdf](#)  
Attachments

Additional information or attachments

Reviewer Comments

**Shahnaz Aly (shahnaz.aly) (02/14/23 2:55 pm):** Rollback: Make further revisions

**Shahnaz Aly (shahnaz.aly) (02/17/23 2:54 pm):** Rollback: Add program outcomes



# Program Change Request

Date Submitted: 02/20/23 5:36 pm

Viewing: **728P, 728 : Mathematics, Bachelor of Arts**

Last approved: 07/20/22 12:44 pm

Last edit: 02/20/23 5:36 pm

Changes proposed by: ptr05178

Catalog Pages

Using this Program

[Mathematics, Bachelor of Arts \(728P, 728\)](#)

Proposed Action

Active

Contact Person

## In Workflow

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

## Approval Path

1. 02/20/23 3:10 pm  
Kanita DuCloux  
(kanita.ducloux):  
Rollback to Initiator
2. 02/20/23 7:28 pm  
Kanita DuCloux  
(kanita.ducloux):  
Approved for MATH Approval

## History

1. May 25, 2021 by  
Rheanna Plemons  
(rheanna.plemons)
2. Sep 27, 2021 by  
Jennifer Hammonds  
(jennifer.hammonds)
3. Mar 7, 2022 by  
Jessica Dorris  
(jessica.dorris)
4. Jul 20, 2022 by Ryan  
Wilson (ryan.wilson)

Name	Email	Phone
Patrick Brown	patrick.brown@wku.edu	2707456247

Term of Implementation 2023-2024

Program Reference Number 728P, 728

Review Type Full Review

Academic Level Undergraduate

Program Type Major

Degree Types Bachelor of Arts

Department Mathematics

College Science and Engineering

Program Name (eg. Biology) Mathematics, Bachelor of Arts

Will this program have concentrations?  
Yes

Concentrations

## Concentrations

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Teacher Certifiable Education (TCHR)  
General (Non-Teacher Certifiable) (MATN)  
~~Non-Teacher Certifiable (MATN)~~

CIP Code 27.0101 - Mathematics, General.

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

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Program Overview (Catalog field: Overview tab)

This major is intended for students that are pursuing a basic math major for employment purposes and/or are interested in mathematics as part of a degree with two majors. Students pursuing teacher certification will also major in [Science and Mathematics Education \(774\)](#).

Curriculum Requirements (Catalog field: Program Requirements)

### Admission Requirements

#### ~~Admission Requirements~~

To be fully admitted to the majors in mathematics with reference numbers 728 or 528, students must complete the following admission requirements:

Earn a "C" or better in each of the following courses: [MATH 136](#), [MATH 137](#), and [MATH 307](#) (or [MATH 310](#)).

Have an overall GPA of at least 2.4 in the mathematics program courses completed prior to admission ([MATH 136](#), [MATH 137](#), and [MATH 307](#) (or [MATH 310](#))).

Note: If a course is repeated, then the second grade is used to compute the GPA. If a course is repeated multiple times, then the average of all grades after the first attempt is used to compute the GPA. **Students can earn a grade in a course a maximum of three times.**

## Program Requirements (39) ~~(36-39 hours)~~

Approved Shared Content from /shared/undergraduate-major-requirements/

Last Approved: Jul 6, 2022 10:48am

A baccalaureate degree requires a minimum of 120 unduplicated semester hours. More information can be found at [www.wku.edu/registrar/degree\\_certification.php](http://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>.

A major in mathematics provides a Bachelor of Arts degree and ~~require~~ **requires either** a minimum of 39 ~~36-39~~ semester hours for a general major with a minor or second major. Note: All mathematics courses listed as prerequisites for other mathematics courses must have been completed with a grade of "C" or better.

Students who wish to declare a 728 mathematics major will initially be designated as "seeking admission" until the following requirements have been satisfied:

Complete [MATH 136](#), [MATH 137](#), and [MATH 307](#) or [MATH 310](#), with a grade of "C" or better in each course.

Have an overall GPA of at least 2.4 in mathematics program courses ([MATH 136](#) and above) completed prior to admission.

The general [mathematics](#) major (728) offers two options:

#### Teacher Certifiable Option (Secondary Mathematics Teacher Certification)

~~Non-teacher Certifiable Major in Mathematics~~ ~~Major Certifiable for Teaching Secondary Level Mathematics.~~ General (Non-teacher Certifiable) Option

Students ~~4 students~~ in the general [mathematics](#) major (728) are required to satisfy a computational requirement as detailed within the options below. ~~by completing either one course chosen from CS 180, PHYS 316, or PHYS 318.~~

~~Option 2 students are required to complete either CS 170 or CS 180.~~ Option 1: Students ~~Non-Teacher Certifiable Major In Mathematics-39 hours~~ ~~The student~~ must complete a minimum of 39 hours of mathematics with a minor or second major giving a total of at least 59 hours (53 unduplicated) with the following requirements. ~~requirements:2~~

# Core Mathematics Courses

All students in the general mathematics (728) major must complete the following core mathematics courses:

<u>MATH 136</u>	Calculus I	4
<u>MATH 137</u>	Calculus II	4
<u>MATH 237</u>	Multivariable Calculus	4
<u>MATH 307</u>	Introduction to Linear Algebra	3
<u>MATH 310</u>	Introduction to Discrete Mathematics	3
<u>MATH 317</u>	Introduction to Algebraic Systems	3
<u>MATH 337</u>	Elements of Real Analysis	3
<u>MATH 498</u>	Senior Seminar	3
<b>Select two courses from the following:<sup>1</sup></b>		<b>6</b>
MATH 405	Numerical Analysis I	
MATH 406	Numerical Analysis II	
MATH 415	Algebra and Number Theory	
MATH 417	Algebraic Systems	
MATH 423	Geometry II	
MATH 431	Intermediate Analysis I	
MATH 435	Partial Differential Equations	
MATH 439	Topology I	
MATH 450	Complex Variables	
MATH 470	Introduction to Operations Research	
MATH 473	Introduction to Graph Theory	
MATH 482	Probability and Statistics II	
<b>Select six hours from the following:<sup>1</sup></b>		<b>6</b>
MATH 305	Introduction to Mathematical Modeling	
MATH 315	Theory of Numbers	
MATH 323	Geometry I	
MATH 331	Differential Equations	
MATH 370	Applied Techniques in Mathematics	
MATH 371	Advanced Computational Problem Solving	
MATH 382	Probability and Statistics I	
MATH 398	Seminar ((up to 3 hours))	

MATH 405	Numerical Analysis I
MATH 406	Numerical Analysis II
MATH 415	Algebra and Number Theory
MATH 417	Algebraic Systems
MATH 423	Geometry II
MATH 435	Partial Differential Equations
MATH 439	Topology I
MATH 450	Complex Variables
MATH 470	Introduction to Operations Research
MATH 475	Selected Topics in Mathematics ((up to 3 hours))
MATH 482	Probability and Statistics II
STAT 301	Introductory Probability and Applied Statistics

Total Hours

27

## Option 2: Teacher Major Certifiable Option

Students in the Teacher for Teaching Secondary Level Mathematics (General Certifiable Option Major) 36 hours The student must complete a minimum of 36 hours of mathematics with a second major in Science and Mathematics Education (774). (reference number 774) with the following requirements:

In addition to the Core Mathematics Courses, students must complete 12 additional hours as follows:

### Required Courses: <sup>3</sup>

MATH 136	Calculus I	4
MATH 137	Calculus II	4
MATH 237	Multivariable Calculus	4
<u>MATH 304</u>	Functions, Applications and Explorations	3
MATH 307	Introduction to Linear Algebra	3
MATH 310	Introduction to Discrete Mathematics	3
MATH 317	Introduction to Algebraic Systems	3
<u>MATH 323</u>	Geometry I	3
MATH 498	Senior Seminar	1-3
<u>MATH 421</u>	Problem Solving for Secondary Teachers	3
MATH 423	Geometry II	
MATH 431	Intermediate Analysis I	
MATH 435	Partial Differential Equations	
MATH 439	Topology I	

MATH 450	Complex Variables	
MATH 470	Introduction to Operations Research	
MATH 482	Probability and Statistics II	
<u>STAT 301</u>	Introductory Probability and Applied Statistics	3
<b>Select a 400-level mathematics course from the following:</b>		<b>3</b>
MATH 405	Numerical Analysis I	
MATH 406	Numerical Analysis II	
MATH 409	History of Mathematics	
MATH 415	Algebra and Number Theory	
MATH 417	Algebraic Systems	

Total Hours 12

Students in the Teacher Certifiable Option must satisfy a computational requirement by completing either CS 170 or CS 180.

## General (Non-Teacher Certifiable) Option

Students in the Non-Teacher Certifiable Option must complete a minor or second major giving a total of at least 59 hours (53 unduplicated).

In addition to the Core Mathematics Courses, students must complete 12 additional hours as follows:

**Select six (6) hours from the following: <sup>1</sup>** **6**

<u>MATH 405</u>	<u>Numerical Analysis I</u>	
<u>MATH 406</u>	<u>Numerical Analysis II</u>	
<u>MATH 415</u>	<u>Algebra and Number Theory</u>	
<u>MATH 417</u>	<u>Algebraic Systems</u>	
<u>MATH 423</u>	<u>Geometry II</u>	
<u>MATH 431</u>	<u>Intermediate Analysis I</u>	
<u>MATH 435</u>	<u>Partial Differential Equations</u>	
<u>MATH 439</u>	<u>Topology I</u>	
<u>MATH 450</u>	<u>Complex Variables</u>	
<u>MATH 470</u>	<u>Introduction to Operations Research</u>	
<u>MATH 473</u>	<u>Introduction to Graph Theory</u>	
<u>MATH 482</u>	<u>Probability and Statistics II</u>	

**Select six (6) hours from the following: <sup>1</sup>** **6**

<u>MATH 305</u>	<u>Introduction to Mathematical Modeling</u>	
<u>MATH 315</u>	<u>Theory of Numbers</u>	

<u>MATH 323</u>	<u>Geometry I</u>
<u>MATH 331</u>	<u>Differential Equations</u>
<u>MATH 370</u>	<u>Applied Techniques in Mathematics</u>
<u>MATH 371</u>	<u>Advanced Computational Problem Solving</u>
<u>MATH 382</u>	<u>Probability and Statistics I</u>
<u>MATH 398</u>	<u>Seminar ((up to 3 hours))</u>
<u>MATH 405</u>	<u>Numerical Analysis I</u>
<u>MATH 406</u>	<u>Numerical Analysis II</u>
<u>MATH 415</u>	<u>Algebra and Number Theory</u>
<u>MATH 417</u>	<u>Algebraic Systems</u>
<u>MATH 423</u>	<u>Geometry II</u>
<u>MATH 435</u>	<u>Partial Differential Equations</u>
<u>MATH 439</u>	<u>Topology I</u>
<u>MATH 450</u>	<u>Complex Variables</u>
<u>MATH 470</u>	<u>Introduction to Operations Research</u>
<u>MATH 475</u>	<u>Selected Topics in Mathematics ((up to 3 hours))</u>
<u>MATH 482</u>	<u>Probability and Statistics II</u>
<u>STAT 301</u>	<u>Introductory Probability and Applied Statistics</u>

Total Hours

12

Students in the General Option must satisfy a computational requirement by completing either CS 180, PHYS 316, PHYS 318 or STAT 330.

1

Students may take certain 500-level mathematics courses for undergraduate credit with the approval of the Department Chair in place of courses listed in the elective sections of the General Option.

2

Note: This major is not intended to prepare students adequately for graduate mathematics. Students intending to seek a graduate degree in mathematics should pursue major 528.

3

Before the "professional semester," the student must complete MATH 136, MATH 137, and either MATH 307 or MATH 310 with a grade of "C" or better and achieve a GPA of at least 2.4 in all mathematics program courses.

4-Year Plan

## Teacher Certifiable Option

First Year

Fall	Hours	Spring	Hours
<u>MATH 136</u>	<u>4</u>	<u>MATH 137</u>	<u>4</u>
<u>SMED 101</u>	<u>3</u>	<u>SMED 102</u>	<u>3</u>

First Year

Fall	Hours	Spring	Hours
<u>CS 180 or CS 170</u>	<u>3-4</u>	<u>COMM 145</u>	<u>3</u>
<u>ENG 100</u>	<u>3</u>	<u>HIST 101 or HIST 102</u>	<u>3</u>
<u>Colonnade - Natural &amp; Physical Sciences w/ lab</u>	<u>3-5</u>	<u>Colonnade - Social &amp; Behavioral Science</u>	<u>3</u>
	16-19		16

Second Year

Fall	Hours	Spring	Hours
<u>MATH 307</u>	<u>3</u>	<u>MATH 310</u>	<u>3</u>
<u>MATH 237</u>	<u>4</u>	<u>MATH 304</u>	<u>3</u>
<u>SMED 310</u>	<u>3</u>	<u>SMED 320</u>	<u>3</u>
<u>ENG 200</u>	<u>3</u>	<u>Colonnade - Arts &amp; Humanities</u>	<u>3</u>
<u>Colonnade - Natural &amp; Physical Sciences w/ no lab</u>	<u>3</u>	<u>World Language Requirement or General Elective</u>	<u>3</u>
	16		15

Third Year

Fall	Hours	Spring	Hours
<u>MATH 317</u>	<u>3</u>	<u>MATH 337</u>	<u>3</u>
<u>MATH 323</u>	<u>3</u>	<u>MATH 421</u>	<u>3</u>
<u>SMED 340</u>	<u>3</u>	<u>STAT 301</u>	<u>3</u>
<u>Colonnade - Writing in the Disciplines</u>	<u>3</u>	<u>SMED 360</u>	<u>3</u>
<u>Colonnade - Local to Global</u>	<u>3</u>	<u>Colonnade - Systems</u>	<u>3</u>
	15		15

Fourth Year

Fall	Hours	Spring	Hours
<u>MATH 498</u>	<u>3</u>	<u>SMED 489</u>	<u>3</u>
<u>SMED 470</u>	<u>3</u>	<u>SEC 490</u>	<u>10</u>
<u>Colonnade - Social &amp; Cultural</u>	<u>3</u>		
<u>General Elective</u>	<u>3</u>		
<u>General Elective</u>	<u>2-3</u>		
	14-15		13

Total Hours 120-124

**General (Non-Teacher Certifiable) Option**

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First Year

Fall	Hours	Spring	Hours
<u>MATH 136</u>	<u>4</u>	<u>MATH 137</u>	<u>4</u>
<u>CS 480</u>	<u>4</u>	General Elective	<u>3</u>
<u>Computational Requirement</u>	<u>3-4</u>	<u>COMM 145</u>	<u>3</u>
<u>ENG 100</u>	<u>3</u>	<u>HIST 101 or HIST 102</u>	<u>3</u>
<u>Colonnade - Natural &amp; Physical Sciences w/ lab</u>	<u>3-5</u>	<u>Colonnade - Social &amp; Behavioral Science</u>	<u>3</u>
	13-16		16

Second Year

Fall	Hours	Spring	Hours
<u>MATH 307</u>	<u>3</u>	<u>MATH 310</u>	<u>3</u>
<u>MATH 237</u>	<u>4</u>	Minor Elective	<u>3</u>



First Year			
Fall	Hours	Spring	Hours
Minor Course	3	Colonnade - Social & Cultural	3
<u>ENG 200</u>	3	Colonnade - Arts & Humanities	3
Colonnade - Natural & Physical Sciences w/ no lab	3	World Language Requirement or General Elective	3
	16		15
Third Year			
Fall	Hours	Spring	Hours
<u>MATH 317</u>	3	<u>MATH 337</u>	3
Math upper-division Elective	3	Math upper-division Elective	3
Minor Course	3	Minor Course	3
Colonnade - Local to Global	3	Colonnade - Systems	3
Colonnade - Writing in the Disciplines	3	General Elective	3
	15		15
Fourth Year			
Fall	Hours	Spring	Hours
Math upper-division Elective	3	<u>MATH 498</u>	3
Minor Course	3	Math upper-division Elective	3
Minor Course or General Elective	3	Minor Course	3
General Elective	3	General Elective	3
General Elective	3	General Elective	3
	15		15

Total Hours 120-123

~~Non-Teacher Certifiable Concentration Teacher Education Concentration~~

~~First Year~~

Fall	Hours	Spring	Hours
<del>MATH 136</del>	<del>4</del>	<del>MATH 137</del>	<del>4</del>
<del>SMED 101</del>	<del>3</del>	<del>SMED 102</del>	<del>2-3</del>
<del>CS 180 or CS 170</del>	<del>3-4</del>	<del>COMM 145</del>	<del>3</del>
<del>ENG 100</del>	<del>3</del>	<del>HIST 101 or HIST 102</del>	<del>3</del>
<del>Colonnade - Natural &amp; Physical Sciences w/ lab</del>	<del>3-5</del>	<del>Colonnade - Social &amp; Behavioral Science</del>	<del>3</del>
<del>-</del>	<del>0</del>	<del>-</del>	<del>0</del>

~~Second Year~~

Fall	Hours	Spring	Hours
<del>MATH 307</del>	<del>3</del>	<del>MATH 310</del>	<del>3</del>
<del>MATH 237</del>	<del>4</del>	<del>MATH 304</del>	<del>3</del>
<del>SMED 310</del>	<del>3</del>	<del>SMED 320</del>	<del>3</del>
<del>ENG 200</del>	<del>3</del>	<del>Colonnade - Arts &amp; Humanities</del>	<del>3</del>
<del>Colonnade - Natural &amp; Physical Sciences w/ no lab</del>	<del>3</del>	<del>World Language Requirement or General Elective</del>	<del>3</del>
<del>-</del>	<del>0</del>	<del>-</del>	<del>0</del>

~~Third Year~~

Fall	Hours	Spring	Hours
<del>MATH 317</del>	<del>3</del>	<del>STAT 301</del>	<del>3</del>
<del>MATH 323</del>	<del>3</del>	<del>Math Elective (400 level)</del>	<del>3</del>
<del>SMED 340</del>	<del>3</del>	<del>SMED 360</del>	<del>3</del>

First Year

Fall	Hours	Spring	Hours
<del>Colonnade—Writing in the Disciplines</del>	3	<del>General Elective</del>	3
<del>Colonnade—Local to Global</del>	3	<del>Colonnade—Systems</del>	3
-	0	-	0

Fourth Year

Fall	Hours	Spring	Hours
<del>MATH 498</del>	3	<del>SMED 489</del>	3
<del>SMED 470</del>	3	<del>SEC 490</del>	10
<del>Colonnade—Social &amp; Cultural</del>	3	-	
<del>General Elective</del>	3	-	
<del>General Elective</del>	3-5	-	
-	0	-	0

Total Hours 0

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

No

Does this program include courses from outside your department?

No

Please insert one Learning Outcome per box. Click green plus sign for additional LO boxes

Learning Outcomes  
and Measurement  
Plan

	List all student learning outcomes of the program.	Measurement Plan
<u>SLO 1</u>	<u>Students will be prepared for employment in government, industry, or academic settings.</u>	<u>Employment prospects of seniors will be monitored in an exit survey.</u>
<u>SLO 2</u>	<u>Students will be able to use technology and apply mathematics to solve problems effectively.</u>	<u>Technology usage will be monitored in an exit survey.</u>
<u>SLO 3</u>	<u>Students will have well-developed abilities to utilize critical thinking and communicate ideas effectively.</u>	<u>Completion of a capstone project in MATH 498.</u>

## 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

*See the SACSCOC Policy on Direct Assessment Competency-based Educational Programs.*

<https://www.sacscoc.org/pdf/081705/DirectAssessmentCompetencyBased.pdf>

## Library Resources

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Attach library  
resources

## Rationale for the program proposal?

We are adding MATH 337, Elements of Real Analysis, to the Teacher Certifiable Option. We believe that some exposure to real analysis is an important component for any mathematics major.

The content for this course will provide greater context and a deeper understanding of the material that secondary teachers will ultimately be teaching, especially for those who will teach calculus in a secondary school setting. Moreover, students in most graduate programs for mathematics teachers, including the MA program at WKU, are required to complete a graduate-level course in real analysis. Having had MATH 337 as part of their undergraduate education should better prepare our graduates for success in their future master's degree program. Finally, not all of the students who complete this major will ultimately pursue a career in teaching. Those who don't will be better prepared for other employment in a mathematical field if they have taken a course in real analysis.

We are replacing the 400-Level elective in the Teacher Certifiable Option with the course MATH 421, Problem Solving for Secondary Teachers. This course requires students to apply concepts from and make connections across the other courses in their major to solve complex problems. We believe this course is more beneficial to future teachers than other 400-level MATH courses currently accepted for this option.

We are adding STAT 330 as an option to fulfill the computational requirement in the General Option. This course provides students choosing to work in industry with marketable skills and knowledge. The course already satisfies the computational requirement in the extended mathematics major (528).

We have reorganized this major in order to simplify the display in the catalog, and to highlight the similarities between the two options in the 728 major.

Finally, the SLOs and Measurement plan are being populated from the most recent program assessment documents.

Additional  
Attachments

Additional information or attachments

Reviewer Comments

**Kanita DuCloux (kanita.ducloux) (02/20/23 3:10 pm):** Rollback: You can make the necessary changes.