

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, April 6, 2023

A. OLD BUSINESS:

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

B. NEW BUSINESS:

Type of item	Description of Item & Contact Information
Informational Proposals not attached.	<u>The following items were sent through the expedited process:</u> Proposal to Add or Revise Course Student Learning Outcomes & Content Outlines PSYS 100, 160, 161, 175, 210, 211, 290, 300, 313, 321, 322, 331, 333, 334, 350, 353, 360, 362, 369, 370, 380. 413, 423, 424, 425, 431, 433, 440, 442, 444, 450, 451, 453, 463, 465, 481, 490, 499 ME 180, 344 Proposal to Suspend a Course AGEC 260, ANSC 428/429, ANSC 344 Proposal to Close/Delete a Program Ref. 605 Agriculture major (minor required)
Action	Proposal to Seek Colonnade Approval AGRI 101, The Science of Agriculture, 3 hrs. Contact: Todd Willian, todd.willian@wku.edu ; x5969
Action	Proposal to Create a New Course AGRI 381: Cannabis Culture and Management, 3 hrs. Contact: Dan Strunk, William.strunk@wku.edu , x5965
Action	Proposal to Create a New Course PHYS 401, History of Physics: Mechanics from Ancient to Modern, 3 hrs. Contact: Scott Bonham, scott.bonham@wku.edu , x6196
Action	Proposal to Revise a Program Ref. 731P/731: Mathematical Economics, 49/61 hrs. Contact: Alex Lebedinsky, alex.lebedinsky@wku.edu , 270-303-0423

C. OTHER BUSINESS

Minutes – OCSE Curriculum Committee

March 2023

Members Present:

Dr. Patrick Brown for Dr. Melanie Autin
Dr. Nahid Gani
Dr. Dr. Scott Grubbs
Dr. Ting-Hui Lee
Dr. Bango Yan for Dr. Jeremy Maddox
Dr. Andy Mienaltowski
Dr. Les Pesterfield
Dr. Todd Willian
Mr. Jason Wilson

Guests: Dr. Cambron, Ms. Nemon, Dr. North, Dr. Schmaltz

FROM: Dr. Stuart Burriss, Chair

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

OLD BUSINESS:

Minutes from the February 2023 meeting required no corrections and were approved as posted.

NEW BUSINESS:

Action Agenda:

Bundle 1, GEOG 434, 466, GEOL 295: Wilson, Grubbs; approved
Bundle 2, EE 447, 448, 499: Brown, Wilson; approved
Bundle 3, GEOG/GEOL 103, GEOG 225, 275, 295: Wilson, Gani; approved
Bundle 4, GEOG 474, 475, 486, 487, 495: Grubbs, Willian; approved
Bundle 5, GEOL 111, 112, 113, 114: Willian, Grubbs; approved
Bundle 6, GEOL 305, 405, 420, 432, 440, 470: Grubbs, Li; approved
Bundle 7, GISC 316, 317, 418, 423: Grubbs, Gani; approved
Bundle 8, ME 220, 240, 325, 330, 332: Wilson, Grubbs; approved
Program 534, ME: Willian, Grubbs; approved
Program 728, MATH: Mienaltowski, Grubbs; approved (routing fixed after the meeting by the Registrar to go to PEC next)

Other Business:

Reminder that AGFS, CHEM, EEAS, PSYS, and SKYT are to elect/re-elect OCSE CC reps; there are no term limits.

Adjourned at 4:27

Course Change Request

Date Submitted: 03/24/23 12:30 pm

Viewing: **AGRI 101 : The Science of Agriculture**

Last revision: 03/24/23 12:30 pm

Changes proposed by: wil99339

Catalog Pages
referencing this
course

[Agriculture - General \(AGRI\)](#)

[Department of Agriculture and Food Science](#)

In Workflow

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

Proposed Action

Approval Path

1. 03/24/23 1:46 pm
Fred DeGraves
(fred.degraves):
Approved for AGRI Approval
2. 04/03/23 1:56 pm
Stuart Burris
(stuart.burris):
Approved for SC Dean

Active

Contact(s)

Name	E-mail	Phone
Todd Willian	todd.willian@wku.edu	(270) 745-5969

Review Type [Full Review](#)

Term for implementation Spring 2024

Academic Level Undergraduate

Course prefix (subject area) AGRI - Agriculture - General

Course number 101

Department	Agriculture
College	Science and Engineering
Course title	The Science of Agriculture
Abbreviated course title	SCIENCE OF AGRICULTURE

Course description

Biological, chemical, and earth science concepts are related to agriculture. Intended for non-majors. Does not count toward agriculture major credit.

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 010000 - Agriculture, 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

Seeking Colonnade approval.

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
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.

This course was created many years ago as a general education course, and was thus not intended for agriculture majors. Agriculture is vitally important, in that all food is created by agricultural means, yet despite this, very few people understand how the field of agriculture functions. Recently there has been a greater awareness toward sustainability, local foods and a connection to the source of our foods and as such, this course will appeal to many WKU students across many disciplines. Agriculture involves animals, plants, food production, value added food products, human health, marketing, finance, communications, journalism, history, global and local economics and others. This course will present the science of agriculture so that students will be more informed about issues facing the discipline and the constituents it serves.

Colonnade Proposal AGRI 101 Colonnade.docx

Syllabus

[AGRI 101 syllabus.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>Recognize and utilize agricultural terms and vocabulary used in the field of agriculture.</u>
<u>2</u>	<u>Identify common equipment, livestock animals, crop plants, and management practices associated with agricultural production.</u>
<u>3</u>	<u>Explain the processes and activities related to food production.</u>
<u>4</u>	<u>Describe and discuss relevant agricultural issues.</u>

Content outline

#	Topic
<u>1</u>	<p><u>Week # Content</u></p> <p><u>1 Introduction, syllabus, What is Agriculture, Civilization and Agriculture</u></p> <p><u>2 National and Kentucky Trends in land use, farms, and farmers, Reasons for land use change over time, Major Kentucky Crops and National Rank</u></p> <p><u>3 Thomas Malthus and Population Growth, Models of Population Growth of Organisms and Resource Limitations, Malthus' Predictions and Today's World</u></p> <p><u>4 World Population Growth historical views compared with current views, Predictions for future population growth, Reasons for population growth</u></p> <p><u>5 Comparing/Contrasting China and India for population growth, policies, future, and consequences, How does US compare?</u></p> <p><u>6 Mineral Nutrition and Plant Growth – the importance of soil pH and influence on crop growth and nutrient availability, Introduction to soils</u></p> <p><u>7 Soil horizons, soil formation, altering soils on large and small scales, Soil Texture and reading the Soil Texture Triangle</u></p> <p><u>8 Green Revolution in Historical Perspective, Borlaug as a scientist and a driving force; Borlaug as a controversial figure, Borlaug's breeding efforts; acceptance of Green Revolution Crops in global agriculture</u></p>

#	Topic
	<p><u>9 What is a Genetically Modified Organism? The early uses of GMO organisms in cropping systems, the types of genetic modification of crops, Current state of GMO's, controversy of GMO plants, comparing US and Europe</u></p> <p><u>10 The importance of Plant Breeding and the modern plant geneticists, GMO crops compared to traditionally-bred crops</u></p> <p><u>11 Global Famine in historic perspective, Causes of Famine, examination of famines current and past</u></p> <p><u>12 Survey of Animal Agriculture in the United States and Kentucky</u></p> <p><u>13 Survey of Crops in the United States and Kentucky</u></p> <p><u>14 Organic Agriculture introduction and Local Agriculture</u></p> <p><u>15 Finals Week</u></p>

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

New Course Proposal

Date Submitted: 03/24/23 12:23 pm

Viewing: **AGRI 381 : Cannabis Culture and Management**

Last revision: 03/24/23 12:23 pm

Changes proposed by: wll42497

In Workflow

1. **AGRI 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. 03/24/23 1:47 pm
Fred DeGraves
(fred.degraves):
Approved for AGRI Approval
2. 04/03/23 1:56 pm
Stuart Burris
(stuart.burris):
Approved for SC Dean

Proposed Action

Active

Contact(s)

Name	E-mail	Phone
Dan Strunk	william.strunk@wku.edu	270-745-5965

Term for implementation Spring 2024

Academic Level Undergraduate

Course prefix (subject area) AGRI - Agriculture - General Course number 381

Department Agriculture

College	Science and Engineering
Course title	Cannabis Culture and Management
Abbreviated course title	CANNABIS CULTURE AND MANAGE

Course description

An in-depth exploration of the history, current trends, and future of cannabis use, production, and consumption. Topics such as the medical, recreational, and spiritual uses of cannabis, the social and political implications of cannabis use, the legal and regulatory landscape, and the economics of the cannabis industry will be discussed. Practical skills such as growing and processing cannabis, as well as navigation of its complex legal and regulatory environment will be incorporated.

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 01.0609 - 01.0609

Does this course have prerequisites

No

Corequisites

Equivalent Courses

Restrictions:

College restriction? No

Field of study restriction/major? No

Classification No

restriction?

Departmental
Restrictions

Reason for
developing the
proposed course

There are several reasons why a course on cannabis production and cultural impacts of cannabis would be valuable. As more and more countries legalize cannabis for both medical and recreational use, there is a growing need for individuals with knowledge and expertise in the production and cultivation of cannabis. A course on cannabis production would provide students with the skills and knowledge necessary to succeed in this emerging industry. In addition, the cultural impacts of cannabis cannot be ignored. Cannabis has a long and complex history, with both positive and negative impacts on society. A course on the cultural impacts of cannabis would explore the history, social, and economic impacts of cannabis use, including its impact on public health, criminal justice, and social equity. As cannabis legalization continues to spread, there is a growing need for education and awareness around responsible use. A course on cannabis production and cultural impacts of cannabis would provide students with a comprehensive understanding of the benefits and risks associated with cannabis use, and how to use cannabis responsibly.

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?

25

How many students
per academic year
are expected to
enroll?

25

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

This has been a special topics course taught as HORT 475 and AGRO 475 with varying titles. Class enrollment has ranged from 10-18 without advertising outside of the department and not being considered for Colonnade.

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

Are you seeking Colonnade approval for this course? Yes

Colonnade Programs Connections

Connections: Course Categories Social & Cultural

Colonnade Proposal [connections-social-cultural-proposal-form AGRI381.docx](#)

Syllabus [AGRI381_Syllabus.docx](#)

Colonnade Learning Outcomes

#	Colonnade Learning Outcomes
1	Examine diverse values that form civically-engaged informed members of society
2	Analyze the development of self in relation to others in society
3	Evaluate solutions to real-world socio-cultural problems

Student Learning Outcomes

#	Student Learning Outcomes
1	Describe the basic anatomy and life cycle of the cannabis plant, including the differences between various strains and their growing requirements
2	Analyze the economic and political factors that have shaped the legalization and regulation of cannabis in different regions, including the United States and Canada

#	Student Learning Outcomes
3	Evaluate the environmental impact of cannabis cultivation, including issues such as water usage, pesticide and fertilizer runoff, and carbon emissions
4	Articulate the history of cannabis use and its cultural significance, including its role in medicine, spirituality, and popular culture
5	Assess the social and public health implications of cannabis consumption, including the potential benefits and risks associated with different modes of ingestion and patterns of use
6	Identify key stakeholders in the cannabis industry, including growers, processors, retailers, and advocacy groups, and analyze their perspectives and goals
7	Develop a research project or case study that addresses a specific issue related to cannabis production or consumption, using interdisciplinary research methods and critical analysis
8	Communicate their knowledge and insights about cannabis production and its social and cultural impact through written assignments, class presentations, and group discussions

Content outline

#	Topic
1	<p>Introduction to Cannabis Production</p> <ul style="list-style-type: none"> • History of cannabis production and cultivation • Overview of cannabis plant anatomy and growth cycle • Basic principles of cannabis production and cultivation
2	<p>Cannabis Cultivation Techniques</p> <ul style="list-style-type: none"> • Indoor and outdoor cultivation methods • Plant nutrition and pest management • Harvesting and processing techniques
3	<p>Cannabis Legalization and Regulation</p> <ul style="list-style-type: none"> • Overview of current legal landscape of cannabis • Federal, state, and local regulations and restrictions • Licensing and permitting requirements
4	<p>Cannabis Distribution and Marketing</p> <ul style="list-style-type: none"> • Overview of cannabis supply chain • Distribution models and channels • Marketing and branding strategies
5	<p>The Social and Cultural Impact of Cannabis</p> <ul style="list-style-type: none"> • Overview of public health considerations related to cannabis use • Impact of cannabis on criminal justice system • Social equity and cannabis legalization
6	<p>Cannabis Use and Society</p> <ul style="list-style-type: none"> • The medical use of cannabis • The social and cultural context of cannabis use

#	Topic
	<ul style="list-style-type: none"> • Cannabis and youth culture
7	Future of Cannabis Production and Use <ul style="list-style-type: none"> • Emerging trends and innovations in cannabis production and distribution • Potential social and cultural impacts of continued legalization and commercialization • Ethical considerations in cannabis industry

Student expectations and requirements

Tentative texts and course materials

Small, Ernest. 2017. Cannabis: A complete guide. CRC Press. Boca Raton, NY.
Williams, David (Ed.). 2019. Industrial Hemp as a Modern Commodity Crop. Wiley

Special equipment, materials, or library resources needed

No special equipment required

Additional information

Supporting documentation

Reviewer Comments

Key: 9672

Course Change Request

New Course Proposal

Date Submitted: 03/22/23 5:17 pm

Viewing: **PHYS 401 : History of Physics:
Mechanics from Ancient to Modern**

Last revision: 03/22/23 5:17 pm

Changes proposed by: sct42135

Proposed Action

In Workflow

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

Approval Path

1. 03/22/23 6:32 pm
Michael Carini
(mike.carini):
Approved for PHYA Approval
2. 04/03/23 1:57 pm
Stuart Burris
(stuart.burris):
Approved for SC Dean

Active

Contact(s)

Name	E-mail	Phone
Scott Bonham	scott.bonham@wku.edu	270-745-6196

Term for implementation Spring 2024

Academic Level Undergraduate

Course prefix (subject area) PHYS - Physics

Course number 401

Department Physics & Astronomy
 College Science and Engineering

Course title
 History of Physics: Mechanics from Ancient to Modern

Abbreviated course HISTORY OF PHYSICS
 title

Course description

A study of the development of our understanding and descriptions of force, motion and energy along with related concepts of space and matter from classical natural philosophers to Newton's laws, mechanical energy and relativity in their historical cultural context.

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

Seminar

CIP Code 401101 - Physics and Astronomy.

Does this course have prerequisites

Yes

Prerequisites

And/Or	(Course/Test Code	Min Grade/Score	Academic Level)	Concurrency?
	(PHYS 201	D	UG		No
Or		PHYS 231	D	UG		No
Or		PHYS 255	D	UG)	No
And		CONE	Y			No

Corequisites

Equivalent Courses

Restrictions:

College restriction? No

Field of study
restriction/major? No

Classification
restriction? No

Departmental
Restrictions

Does not count towards satisfying course requirements in the physics major EXCEPT for students pursuing high school teaching certification.

Reason for
developing the
proposed course

Introductory physics (mechanics) is generally taught in a way that can give the impression that Newton, Einstein and others developed their theories nearly entirely on their own, rather than serving as the final link in a chain of many thinkers, who consolidated decades or even centuries of development of ideas into the final, coherent theoretical system, and that this did not happen divorced from personal lives and the social and cultural context in which the different thinkers lived. This course is being developed to address this issue, and in particular with three particular groups of students involved. The first group are future science teachers--especially physics teachers--for whom a better understanding of physics will serve to provide intellectual resources for understanding and supporting students struggling to master in a few weeks what took western civilization nearly two millennia to figure out, to have a better grasp of the nature and dynamics of science, and to be able to put a more human face on science and connect it to social interests. The second is for future science and other STEM professionals, particularly those likely to interact with the general public and communicate with them about science and technology, as of a knowledge of the history of their field (or a related one) would provide a better understanding of the origins of modern science and its complex social-cultural interactions. The third group of students would be those interested in the history of the history of thought and science, as the history of mechanics spans from its roots in classical Greek thought through medieval scholars, was intimately connected to the dawn of the early modern period, continuing into present times.

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.

History, Alex Olson, 3/15/2023

SKyTeach, Catherine Poteet and Melissa Rudloff, 3/14/2023

How many sections

of this course per
academic year will
be offered?

1

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

15

How many students
per academic year
are expected to
enroll?

15

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

These numbers and frequencies are consistent with the other Colonnade Connections courses the department offers; like them, it is expected to be capped at 20 students to ensure that good class discussions can happen.

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

Are you seeking Colonnade approval for this course? Yes

Colonnade Programs Connections

Connections: Course Categories Systems

Colonnade Proposal [History_of_Physics_colonnade.docx](#)

Syllabus [History_of_Physics_syllabus.docx](#)

Colonnade Learning Outcomes

#	Colonnade Learning Outcomes
1	Compare the study of individual components to the analysis of entire systems.
2	Analyze how systems evolve.
3	Evaluate how system-level thinking informs decision-making.

Student Learning Outcomes

#	Student Learning Outcomes
1	Identify a component (e.g. motion, nature of matter, concept of space, place of the earth) in an ancient or medieval system of physics that is different from modern understanding, describe its place/role within that larger conceptual system and discuss in what ways that was a reasonable idea given the available knowledge and information. (Colonnade learning objective: Compare the study of individual components to the analysis of entire systems.)
2	Describe how selected components of physics (e.g. motion, nature of matter, concept of space, place of the earth) understanding have evolved and changed from classical Greek thought to modern understanding of physics, including how different scientific and cultural factors have shaped this evolution. (Colonnade learning objective: Analyze how systems evolve.)
3	Describe and explain important elements of how scientific truth is established and communicated, utilizing historical examples and developments and applying it to teaching science, science related public policy related, communicating science to the public, etc. (Colonnade learning objective: Evaluate how system-level thinking informs decision-making.)
4	Describe the life and significant contributions of a pre-Newton figure in the history of Physics.
5	Carry out and report on observations and experiments that replicated key historical observations and experiments, using historically available instruments and communication means.

Content outline

#	Topic
1	Classical Greek thought: Atomist natural philosophy, Platonic natural philosophy, Aristotle on Physics and the cosmos. Natural world as a physical system that can be investigated through reason and observation.
2	Ptolemy's Almagest, the classical synthesis of theoretical models, data and mathematics, and its transmission through the Islamic Golden age through the Toledo translators to medieval Europe.
3	European medieval thought: rise of the universities, acceleration and the mean speed theorem, impetus theory, the literary genre of Questionnes as forerunner of modern scientific works.
4	Galileo and early modern science: Galileo's experiments with motion and pendulums, Francis Bacon's philosophy of science and the open assault on scholastic Aristotleism.
5	Newton and the Principia: Newton's monumental synthesis and the new system of mechanics, the beginnings of scientific societies and journals and modern relationship with the state.

#	Topic
6	18th and 19th centuries: development of concept of energy, modern atoms, and challenges of electromagnetism, technology and Positivism.
7	Einstein and modern physics: special relativity and nature of matter, Popper and Kuhn's philosophies of science.

Student expectations and requirements

Students will be expected to read the assigned material, which will contain a mix of primary and secondary texts and come prepared to discuss them during class, supplemented by exercises. Students will also recreate and report on a small number of historical observations and experiments using only equipment and communication tools that were available at that time (e.g. no mathematical equations for pre-Newtonian investigations). Students will write papers or similar on the evolution of physics concepts from classical Greek natural philosophy through modern physics, looking at the biographies of historical scientists and showing how specific elements worked within the larger system of thought and apply the understanding of the history and nature of science developed to contemporary issues such as teaching science or setting science-related policies.

Tentative texts and course materials

Mechanics: from Aristotle to Einstein, Michael J. Crowe, Green Lion Press (2007, Santa Fe, NM)

This will be supplemented by selected texts from Lucretius, Plato, Aristotle, Archimedes, Ptolemy, Oresme, Buridan, Bacon, and others.

Special equipment, materials, or library resources needed

None

Additional information

Supporting documentation

[History_of_Physics_syllabus.docx](#)

Reviewer Comments

Key: 9688

Program Change Request

Date Submitted: 02/20/23 4:56 pm

Viewing: ~~731P~~, **731 : Mathematical Economics, Bachelor of Science**

Last approved: 04/22/22 3:16 pm

Last edit: 02/20/23 4:56 pm

Changes proposed by: alx50504

Catalog Pages

Using this Program

[Mathematical Economics, Bachelor of Science \(731P, 731\)](#)

Proposed Action

In Workflow

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

Approval Path

1. 02/20/23 4:57 pm
Alexander Lebedinsky (alex.lebedinsky):
Approved for ECON Approval
2. 02/21/23 8:28 am
Christopher Shook (christopher.shook):
Approved for BU Dean
3. 03/01/23 1:31 pm
Evelyn Thrasher (evelyn.thrasher):
Approved for BU Curriculum Committee
4. 03/23/23 1:24 pm
Kanita DuCloux (kanita.ducloux):
Approved for MATH Approval
5. 04/03/23 1:56 pm
Stuart Burris

(stuart.burris):
Approved for SC
Dean

History

1. May 13, 2021 by Rheanna Plemons (rheanna.plemons)
2. May 26, 2021 by Rheanna Plemons (rheanna.plemons)
3. Sep 27, 2021 by Jennifer Hammonds (jennifer.hammonds)
4. Feb 10, 2022 by Jessica Dorris (jessica.dorris)
5. Apr 22, 2022 by Jessica Dorris (jessica.dorris)

Active

Contact Person

Name	Email	Phone
Alex Lebedinsky	alex.lebedinsky@wku.edu	2703030423

Term of Implementation 2023-2024

Program Reference Number ~~731P~~, 731

Review Type Full Review

Academic Level Undergraduate

Program Type Major

Degree Types Bachelor of Science

Department Economics

College Business

Program Name (eg. Biology) Mathematical Economics, Bachelor of Science

Will this program have concentrations?
Yes

Concentrations

Concentrations

General Mathematical Economics (MEGM)

Actuarial Science (MEAS)

CIP Code 45.0603 - Econometrics and Quantitative
Economics.

Will this program No
lead to teacher
certification?

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

Program Overview (Catalog field: Overview tab)

The BS in Mathematical Economics is for students wishing to pursue either a graduate degree in economics or a highly applied, analytical occupation with a heavy emphasis on quantitative skills such as an actuary. This degree does not require a second major or a minor. The BS in Mathematical Economics offers two concentrations: General concentration and Actuarial Science concentration.

International students who complete this program may qualify for the STEM OPT extension (the CIP Code of the program is 45.0603).

The General concentration in the BS in Mathematical Economics requires a minimum of 49 hours. This major is strongly recommended for students considering either a PhD in Economics or highly applied, analytical occupations, especially in data analytics. Because doctoral programs in economics are highly mathematical, this degree combines the economics coursework with the mathematics courses that are necessary to succeed in an economics doctoral program. The Actuarial Science concentration in the BS in Mathematical Economics requires a minimum of 61 hours. This degree is strongly recommended for students pursuing careers as actuaries. Actuaries are professionals who specialize in modeling and managing risks. Actuaries typically work for health, life, and property insurance companies, but individuals with actuarial training may work in many other areas such as banking, investment, energy, government, employee benefits, predictive analytics, and many more. Actuaries use a combination of strong analytical skills, business knowledge, and an understanding of human behavior. It takes five to seven years on average to become an actuary after completing an undergraduate degree. To become an actuary, one must pass a series of exams to earn an actuarial designation by either the Casualty Actuarial Society (CAS) or the Society of Actuaries (SOA). Students in the Actuarial Science concentration will take courses that will help them prepare for the first two actuarial exams. As a part of becoming an actuary, candidates must also earn Validation by Educational Experience (VEE) credits, which demonstrate that as students they received academic training in certain required areas. The course work in this concentration is designed for students to receive all three of the VEE credits required by the SOA: Economics, Mathematical Statistics, and Accounting and Finance.

Curriculum Requirements (Catalog field: Program Requirements)

~~Admission Requirements Admission to the
Mathematical Economics major requires: Completion of
MATH 136, ECON 202 and ECON 203, and ECON 206
or STAT 301 with a minimum GPA of 2.0 in the
courses listed. Completion of a minimum of 60 hours with
a minimum GPA of 2.0 overall. Completion of a minimum
of 12 hours at Western Kentucky University with a
minimum WKU GPA of 2.0. Program Requirements
(49/61 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.

Students who began WKU in the Fall 2014 and thereafter should review the Colonnade requirements located at:
<https://www.wku.edu/colonnade/colonnaderequirements.php>.

The major in Mathematical Economics requires a total of 120 credit hours with a core of 18 hours in economics, 15 hours in mathematics, and 1 hour of an interdisciplinary seminar course. The concentration in general mathematical economics requires an additional 9 hours in economics and 6 hours in mathematics. The concentration in actuarial science requires an additional 3 hours in economics, 9 hours in mathematics, 15 hours in finance, and 3-4 hours in computer science.

The program of study does not require completion of a second major or minor.

Core Courses

ECON 202	Principles of Economics (Micro)	3
ECON 203	Principles of Economics (Macro)	3
ECON 206	Statistics	3
or STAT 301	Introductory Probability and Applied Statistics	
ECON 302	Microeconomic Theory	3
ECON 303	Macroeconomic Theory	3
Select one of the following:		3

ECON 465	Regression and Econometric Analysis	
ECON 480	Economic Forecasting	
STAT 401	Regression Analysis	
MATH 136	Calculus I	4
MATH 137	Calculus II	4
MATH 237	Multivariable Calculus	4
MATH 307	Introduction to Linear Algebra	3
ECON/MATH 497	Senior Seminar in Mathematical Economics	1
Total Hours		34

Additionally, majors must choose a concentration in either General Mathematical Economics or Actuarial Science.

General Mathematical Economics Concentration

ECON 306	Statistical Analysis	3
or ECON 307	Financial Data Modeling	
ECON 464	Introduction to Mathematical Economics	3
Select 3 hours of 300- and 400-level economics electives		3
MATH 331	Differential Equations	3
or MATH 310	Introduction to Discrete Mathematics	
Select one of the following:		3
MATH 331	Differential Equations	
MATH 310	Introduction to Discrete Mathematics	
MATH 305	Introduction to Mathematical Modeling	
MATH 382	Probability and Statistics I	
MATH 435	Partial Differential Equations	
MATH 405	Numerical Analysis I	
ECON 399	Career Readiness in Economics	<u>1</u>
Total Hours		16

Actuarial Science Concentration

ECON 307	Financial Data Modeling	3
MATH 310	Introduction to Discrete Mathematics	3
MATH 382	Probability and Statistics I	3
MATH 482	Probability and Statistics II	3

FIN 330	Principles of Finance	3
FIN 332	Investment Theory	3
FIN 334	Financial Mathematics	3
FIN 350	Risk Management and Insurance	3
FIN 437	Corporate Asset Management	3
CS 170	Problem Solving and Programming	3-4
or CS 180	Computer Science I	
or STAT 330	Introduction to Statistical Software	
ACTU 301	Course ACTU 301 Not Found	<u>3</u>
Total Hours		30-31
4-Year Plan		

Actuarial Science Concentration

First Year

Fall	Hours	Spring	Hours
BA 170	1	COMM 145	3
ENG 100	3	MATH 137	4
MATH 136	4	ECON 202	3
Colonnade - Arts & Humanities	3	HIST 101 or HIST 102	3
General University Elective	3	Colonnade - Natural & Physical Sciences w/ lab	3
	14		16

Second Year

Fall	Hours	Spring	Hours
ACCT-220	3	CS 170 , CS 180 , or STAT 330(RECOMMENDED)	3-4
ECON 203	3	FIN 330	3
ACCT 110 (Pre-requisite for FIN 330)	<u>3</u>	ECON 206 or STAT 301	3
MATH 307	3	MATH 237	4
MATH 310	3	Colonnade - Natural & Physical Sciences	3
Colonnade - Literary Studies	3		
	15		16-17

Third Year

Fall	Hours	Spring	Hours
ECON 302	3	ECON 303	3
ECON 307	3	FIN 332	3
FIN 334	3	FIN 350	3
MATH 382	3	MATH 482	3
ACTU 301	<u>3</u>	Colonnade - Writing in the Disciplines	3
Colonnade - Connections Social & Cultural or Local to Global or Systems	3		

First Year			
Fall	Hours	Spring	Hours
	15		15
Fourth Year			
Fall	Hours	Spring	Hours
ECON 465 , STAT 401 , or ECON 480 ¹	3	ECON 497 or MATH 497	1
FIN 437	3	Colonnade - Connections Social & Cultural or Local to Global or Systems	3
FIN 438 *	3	General University Elective	3
Colonnade - Connections Social & Cultural or Local to Global or Systems	3	General University Elective	3
General University Elective	3	General University Upper-Division Elective	3
		General University Elective	1
	15		14
Total Hours 120-121			
1			

It is recommended that ECON 465 should be taken during the second to last semester as it will help student prepare for the Senior Seminar. ECON 465 should not be taken concurrently with ECON 499 or ECON 497

2

ECON 480 and FIN 438 are not required for the degree. However, FIN 438 can be used toward a VEE credit, and ECON 480 will help students prepare for actuarial exams.

General Concentration

First Year			
Fall	Hours	Spring	Hours
BA 175	3	COMM 145	3
ECON 202	3	HIST 101 or HIST 102	3
ENG 100	3	MATH 137	4
MATH 136	4	Colonnade - Arts & Humanities	3
Colonnade - Natural Sciences w/ lab	3	Colonnade - Literary Studies	3
	16		16
Second Year			
Fall	Hours	Spring	Hours
MATH 307	3	CS 170 or CS 180	3-4
ECON 203	3	ECON 206 or STAT 301	3
MATH 310 or MATH 331	3	MATH 237	4
Colonnade - Natural & Physical Sciences w/ no lab	3	Colonnade - Social & Cultural or Local to Global or Systems	3
Colonnade - Connections Social & Cultural or Local to Global or Systems	3	General Elective	3
	15		16-17
Third Year			
Fall	Hours	Spring	Hours
ECON 302	3	ECON 303	3
ECON 306	3	ECON 465 , ECON 480 , or STAT 401	3
General upper-division Elective	3	Colonnade - Writing in the Disciplines	3

First Year

Fall	Hours	Spring	Hours
General Elective	3	Colonnade - Connections Social & Cultural or Local to Global or Systems	3
<u>MATH 305</u> , <u>MATH 310</u> , or <u>MATH 331</u>	3	General Elective	3
	15		15

Fourth Year

Fall	Hours	Spring	Hours
<u>ECON 464</u>	3	<u>ECON 497</u> or <u>MATH 497</u>	1
<u>ECON 465</u> ¹	3	General upper-division Elective	3
General upper-division Elective	3	General upper-division Elective	3
General upper-division Elective	3	General Elective	3
General Elective	3	General Elective	2
	15		12

Total Hours 120-121

1

It is recommended that ECON 465 should be taken during the second to last semester as it will help student prepare for the Senior Seminar. ECON 465 should not be taken concurrently with ECON 499 or ECON 497.

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

Yes ~~No~~

Interdisciplinary
Departments

Secondary Departments

Mathematics (MATH)

Does this program include courses from outside your department?

Yes

Outside Courses
Details

Who approved including these courses?	When were they approved?
<u>The program uses a number of FIN courses, which was approved by the Finance department.</u>	<u>When the program was introduced in 2011</u>

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>Student Learning Outcome 1: Students will demonstrate their ability to apply mathematical models to study economic questions.</u>	<u>Instrument 1 Direct: Analysis of Capstone Project/Research Paper</u>

	List all student learning outcomes of the program.	Measurement Plan
<u>SLO 2</u>	<u>Student Learning Outcome 2: Students will demonstrate ability to convey their research findings using oral communication.</u>	<u>Instrument 1 Direct: Capstone Project Poster Presentation</u>
<u>SLO 3</u>	<u>Student Learning Outcome 3: Students will demonstrate knowledge of key principles of microeconomics.</u>	<u>Instrument 1 Direct: Microeconomics Exam</u>
<u>SLO 4</u>	<u>Student Learning Outcome 4: Students will demonstrate knowledge of key principles of macroeconomics.</u>	<u>Instrument 1 Direct: Macroeconomics Exam</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

Attach library

resources

Rationale for the program proposal?

The current proposal:

1. Changes the program requirement from FIN 334 to ACTU 301 for the Actuarial Science concentration of this major. This reflects a proposed prefix and course number change from FIN 334 to ACTU 301.
2. Adds ECON 399 - Career Readiness in Economics - to the General concentration of this major. This course focuses on getting students ready for the job market and has already been added to Economics BA and Business Economics BS. This course is added only to the General concentration because ACTU 301 includes a career readiness component that is specific to the actuarial careers.
3. Removes admission requirements and 731P code from the major to bring it in line with most of the programs at the university and especially in the College of Business.
4. Updates the information to reflect the fact that the program is managed and co-owned by two departments - Economics and Mathematics.
5. Updates SLOs.

Additional

Attachments

Additional information or attachments

Revised by Registrar 4/22/22. ACCT 200 updated to ACCT 220 effective 202230.

Reviewer Comments

Key: 313