

**KENTUCKY STATE UNIVERSITY
FACULTY SENATE
ACTION TRACKING DOCUMENT**

EFFECTIVE DATE: Code: cc 23-24-27

Date Introduced: 5/06/2024

Date Last Revised: 5/03/2024

Origin:

- Academic Policies Committee
- Budget and Academic Support Committee
- Curriculum Committee
- Executive Committee
- Professional Concerns Committee
- Senate Resolution
- Other (specify) _____

Description

This action establishes the Master of Science in Biological and Agricultural Engineering program.

Justification

The new MS program in Biological & Agricultural Engineering provides direct pathway to students graduating from BS program in Bio & Ag engineering from School of Engineering and Technology at KSU. Expansion of the offerings in the School of Engineering and Technology was guided by Gray and Associate's Program Economics and Marketing analysis, which shows the potential for growth in the Commonwealth for the proposed program. The organic growth from that system-wide work has guided this prospectus. Faculty members and leaders across the campus participated in the work group and provided feedback on which programs to start, grow, fix, or sunset. The graduate program in Biological & Agricultural Engineering is a key workforce demand for the Commonwealth of Kentucky.

Key Words: Agriculture Food Environment

I. Committee Approval: Date: 5/03/2024

Chairperson: Changzheng Wang *Changzheng Wang* Date 5/03/2024

II. Senate Action: Approved Disapproved Returned

Senate President: _____ Date _____

III. Vice President Academic Affairs: Approved Disapproved Returned

VPAA Signature: _____ Date: _____

On approval, please forward the original to the President and send the attached notification to the Faculty Senate Office

IV. President: Approved : Disapproved : Returned

President: _____ Date: _____

Distribution:

- President
- Vice President for Academic Affairs
- Registrar
- Faculty Senate President for Distribution to:
- Committee Chair
- Senate Office Records
- Faculty Handbook
- Other: _____



CURRICULUM COMMITTEE
New Graduate PROGRAM/ PROGRAM CHANGE PROPOSAL

ACADEMIC UNIT: School of Engineering and Technology

DATE PREPARED: 04/25/2024

PRIMARY AUTHOR(S): Jyotica Batra

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee) (Date)

CHAIRPERSON

APPROVED:

(Chairperson's Signature) (Date)

DEAN APPROVED:

(Dean's Signature) (Date)

GRADUATE COUNCIL

APPROVED:

(Director of Graduate Studies Signature) (Date)

CHECK ITEM(S) BELOW FOR CHANGES DESIRED:

- Multiple checkboxes for degree changes: New Degree/Certification, Deletion of Degree or Certification, New or Revised Major, New or Revised Minor, Revised Degree or Certification, Other (specify below):

1. DESCRIPTION OF CHANGE: New MS degree program in Biological and Agricultural Engineering
NEW

Overview: The Master of Science in Biological and Agricultural Engineering (MS) degree provides students with a combination of experiences in basic research, design, and practical applications beyond the undergraduate level.





Hydrology and water systems management.

The Master of Science thesis option degree requires students to complete advanced course work and to become skilled in research methodology. Students are expected to plan, conduct and analyze a comprehensive research project, and to report the findings in a thesis.

The Master of Science non-thesis option degree requires students to complete advanced coursework along with a capstone/directed studies course.

This program is offered in collaboration with the College of Agriculture, Community and Environment

2. STARTING WITH:

Fall ____ Spring 2025 ____ Summer ____ _____ Year

3. EXPLANATION AND JUSTIFICATION FOR REQUESTED CHANGE

The new MS program in Biological & Agricultural Engineering provides direct pathway to students graduating from BS program in Bio & Ag engineering from School of Engineering and Technology at KSU. Expansion of the offerings in the School of Engineering and Technology was guided by Gray and Associate's Program Economics and Marketing analysis, which shows the potential for growth in the Commonwealth for the proposed program. The organic growth from that system-wide work has guided this prospectus. Faculty members and leaders across the campus participated in the work group and provided feedback on which programs to start, grow, fix, or sunset. The graduate program in Biological & Agricultural Engineering is a key workforce demand for the Commonwealth of Kentucky.





KSU Biological and Agricultural Engineering (MS) Curriculum: 36 credit hours per degree			
courses required (18 credit hours)			credit hrs.
BAE	501	Agricultural Systems Analysis	3
BAE	514	Renewable Energy Conversions	3
BAE	517	Fundamentals of Nanoscale Biological Engineering	3
BAE	520	Food Rheology	3
BAE	522	Experimental Methods in Bio. & Ag. Engineering	3
BAE	525	Food Process Engineering	3
Electives (9 hours for Thesis Option; 12 hours for Non-Thesis/Capstone)			
BAE	527	Engineering Aspects of Packaging	3
BAE	531	Bioprocesses and Separations in Biotechnology	3
BAE	542	Water-Energy-Food Nexus: Toward Sustainable Resource Manag	3
BAE	551/ ENV 508	Geographic Information System for Resource Management	3
BAE	552/ ENV 585	Advanced Topics in precision Ag. Systems	3
BAE	555	Principles of Modern Optical Spectroscopy	3
BAE	561	Unit Operations in Food Processing	3
BAE	562	Advanced analytical Methods in Bio. & Ag. Engineering	3
BAE	565	Design of Biological Waste Treatment Systems	3
BAE	569	Water Quality Engineering	3
BAE	570	Air Pollution Engineering	3
BAE	572	Small Watershed Hydrology	3
BAE	574	Vadose Zone Hydrology	3
BAE	575	Hydrology Across Scale	3
BAE	589	Special Topics in...(1-3)	3
Thesis option			
BAE	584	Professional Internship (3)	3
BAE	600	Research (1-3)	3
BAE	601	Thesis (3)	3
Total			36
Capstone/Non-Thesis option			
BAE	584	Professional Internship (3)	3
BAE	699	Directed Studies / Capstone	3
Total			36
This program is offered in conjunction with the College of ACEN			





NEW MS DEGREE PROGRAM

Total NEW courses: 25

Student learning outcomes are based on educational outcomes suggested by the Accreditation Board for Engineering and Technology (ABET) and the objectives of the program:

Program-level Student Learning Outcomes (Criteria from ABET Engineering Technology Accreditation Commission)

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an 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
5. 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
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
8. Conduct independent research with expertise in research design, methods and analysis.

Course Descriptions

BAE 501 Agricultural Systems Analysis: Application of data analytic thinking and data science techniques to the analysis and management of technical systems in agriculture; introduction to supervised and unsupervised methods applied to business problems in the food and agricultural sectors. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.





BAE 514 Renewable Energy Conversions: Managing energy/power systems through engineering and technical aspects of quantifying and designing the suitability of several types of renewable energy resources; providing new insights of vast resources that future engineers can harness to augment diminishing supplies of non-renewable energy. Prerequisites: [PHY 320](#) or approval of instructor. Credits 3. 2 Lecture Hours. 2 Lab Hours.

BAE 517 Fundamentals of Nanoscale Biological Engineering: Nanostructures, nanofabrication methods, instrumentation and applications pertinent to Biological, Food and Bioenergy systems; provides opportunity to identify and utilize key tools available for fabricating, manipulating and analysis of nanostructures used in Biological Engineering applications. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.

BAE 520 Food Rheology: Principles of elasticity, viscous flow and visco-elasticity applied to solid and liquid food materials; experimental determination of rheological properties using fundamental methods and empirical textural measurements; applications to food engineering research, textural measurement and quality control. Credits 3. 3 Lecture Hours.

Prerequisites: [EGR 220](#) or BAE 422 ; [PHY 211](#) or equivalent; graduate classification; or approval from instructor.

BAE 522 Experimental Methods in Bio. & Ag. Engineering: Planning and carrying out empirical research with appropriate application of statistical methods for experimental design and analysis; experimental design, data analysis, hypothesis testing, and experimental errors. Prerequisites: MAT 200 or equivalent with approval of instructor. Credits 3. 3 Lecture Hours.

BAE 525 Food Process Engineering: Application of engineering fundamentals to the design of novel/advanced food processing systems including food irradiation, advances in thermal process, food freezing, food dehydration. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours

BAE 527 Engineering Aspects of Packaging: Introduction to properties and engineering aspects of materials for use as components of a package and/or packaging system; principles of design and development of packages; evaluation of product-package-environment interaction mechanisms; testing methods; environmental concerns; regulations. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.

BAE 531 Bioprocesses and Separations in Biotechnology: Application of engineering principles to recovery and purification of biological compounds derived from cell grown in bioreactors, transgenic





animals, and plants. Process development, design, and scale up of downstream processes used in biotechnology and pharmaceutical industry. Emphasis on extraction, sedimentation, membrane filtration, precipitation, and liquid chromatography. Prerequisites: Graduate classification or approval of instructor. Credits 3. 2 Lecture Hours. 2 Lab Hours.

BAE 542 Water-Energy-Food Nexus: Toward Sustainable Resource Management: Principles and application of the Water-Energy-Food nexus to state, national and international Water-Energy-Food securities and the interlinkages between them; exploration of quantitative framework to develop and assess sustainable tradeoffs of resources; hands on experiences; relevant real world projects or case studies. Prerequisites: Strong analytical background; approval of instructor. Credits 3. 3 Lecture Hours.

BAE 551/ENV 508 Geographic Information System for Resource Management: Geographic Information System (GIS) approach to the integration of spatial and attribute data to study the capture, analysis, manipulation and portrayal of natural resource data; examination of data types/formats, as well as the integration of GIS with remote sensing and Global Positioning System; laboratory includes extensive use of GIS applications to conduct analyses of topics in natural resources. Prerequisites: Graduate classification, Cross Listing: [ENV 508](#) and BAE 551 Credits 3. 2 Lecture Hours. 2 Lab Hours

BAE 552/ENV 585 Advanced Topics in Precision Ag. Systems: Advanced GIS topics with a focus on modeling actual GIS applications including relational and database theory, design and implementation and its connection to GIS; surface analysis with digital terrain models; and an introduction to spatial statistics. Prerequisite: [BAE 551](#). Cross Listing: ENV 585/[BAE 552](#). Credits 3. 2 Lecture Hours. 2 Lab Hours.

BAE 555 Principles of Modern Optical Spectroscopy: Optical spectroscopic techniques—their principles, based on the fundamentals of electromagnetism, interaction of light with matter and modern physics; Laser Induced Fluorescence; fluorescence correlation spectroscopy—single molecule spectroscopy; Raman spectroscopy ; optical coherence tomography; low coherence speckle interferometry; optical tweezers; imaging and microscopy beyond diffraction limit. Prerequisites: Graduate classification. Credits 3. 3 Lecture Hours.

BAE 561 Unit Operations in Food Processing: Design of food process engineering systems; basic concepts of rheology and physical properties of foods; fundamentals of heat and mass transfer and process control. Prerequisites: EGR 320, PHY 320. Credits 3. 2 Lecture Hours. 2 Lab Hours.





BAE 562 Statistical Methods in Bio. & Ag. Engineering: Statistical methods applied to problems in biological and agricultural engineering; parameter estimation; probability distribution fitting; time-series analysis; random variable generation; uncertainty analysis. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.

BAE 565 Design of Biological Waste Treatment Systems: Management and treatment of high organic content waste streams, with emphasis on agricultural; municipal, and agro-Industry wastewater; engineering design of biological waste treatment processes: resource recovery from waste streams: recycle and reuse of finished effluents. Prerequisite: Graduate classification or approval of instructor. Credits 3. 3 Lecture Hours.

BAE 569 Water Quality Engineering: Nonpoint source pollution processes including transport mechanisms and contaminant fate; design of best management practices for abating nonpoint source pollution. Prerequisites: graduate classification. Credits 3. 3 Lecture Hours.

BAE 570 Air Pollution Engineering: Current topics in air pollution engineering including design and operation of air pollution abatement systems (cyclone, bag filters and scrubbers), emission factors, dispersion modeling, permitting, odor sensing and control, EPA/State Air Pollution Regulatory Agency (SAPRA), TSP, PM10, and PM2.5. Prerequisites: Graduate classification or approval of instructor. Credits 3. 3 Lecture Hours.

BAE 572 Small Watershed Hydrology: Hydrology of small agricultural watersheds; precipitation frequency analysis; infiltration; runoff; erosion theory; sediment transport theory; evapotranspiration, and use of hydrological models. Prerequisites: Graduate classification. Credits 3. 3 Lecture Hours.

BAE 574 Vadose Zone Hydrology: Fundamental concepts and advanced mathematical and experimental techniques for quantifying water, chemical, microorganism, and heat transport in the vadose zone (between soil surfaces and groundwater); provides a common platform for addressing issues related to soil and water resources, hydrology, geochemistry, microbiology, ecology, hydrogeology, and environmental engineering. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.

BAE 575 Hydrology Across Scale: Advanced concepts of surface and subsurface hydrologic processes, measurements, and modeling techniques across different spatio-temporal scales; contemporary issues related to the soil and water resources, hydrogeology, geochemistry, microbiology, ecology, hydrology, and environmental engineering. Prerequisite: Graduate





classification in any engineering, agricultural science or geoscience program with environmental focus. Credits 3. 3 Lecture Hours.

BAE 584 Professional Internship: An on-the-job supervised experience program, conducted on an individual basis in the area of the student's specialization in mechanized agriculture. Prerequisite: Graduate classification or approval of instructor. Credits 3. 1 to 3 Other Hours.

BAE 589 Special Topics in.: Selected topics in an identified area of agricultural engineering. May be repeated for credit. Credits 1 to 3. 1 to 3 Lecture Hours. 0 to 3 Lab Hours.

BAE 600 Research: Development of research inquiry and discussion of applicable experimental design, theoretical techniques and methodological principles of conducting original research; evaluation of current research of faculty and students and in engineering and scientific literature. Communication of research proposals and results. May be repeated for credit. Prerequisites: Graduate classification. Credit 1 to 3. 1 to 3 other hours

BAE 601 Thesis: Credits 3. 3 Other Hours. Research for thesis or dissertation.

BAE 699 Directed Studies/ Capstone: Advanced laboratory or field problems not related to student's thesis. Prerequisite: Graduate classification. Credits 3. 3 Other Hours.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED: _____

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

CHAIRPERSON

APPROVED: _____

(Chairperson's Signature)

04/30/2024

(Date)

DEAN APPROVED

(Dean's signature)

Chi Shen _____

5/2/2024

(Date)

GRADUATE COUNCI

APPROVED _____

(Director of Graduate Studies Signature)

(Date)

-
1. NEW COURSE NUMBER: BAE 501
 2. NEW COURSE TITLE: Agricultural Systems Analysis
 3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: Agricultural Systems Analysis: Application of data analytic thinking and data science techniques to the analysis and management of technical systems in agriculture; introduction to supervised and unsupervised methods applied to business problems in the food and agricultural sectors.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS: **BAE 501**
Agricultural Systems Analysis: Application of data analytic thinking and data science techniques to the analysis and management of technical systems in agriculture; introduction to supervised and unsupervised methods applied to business problems in the food and agricultural sectors.

Prerequisite: Graduate classification.

Credits 3.000

3.000 Lecture Hours.

5. PREREQUISITES: Graduate Classification

6. REQUIRED COURSE: Yes No

7. CREDITS: (a) Number 3

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: Yes No

(d) Grading systems permitted: A-F P/F Credit/No Credit

Exceptions: _____

8. Course Level: Elementary
 Intermediate
 Intermediate/Advanced
 Advanced

9. Delivery Method: Online
 Hybrid (Part online and part in person on a regular basis)
 Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: Each semester
 Annually
 Biennially
 Occasionally

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

12. **STARTING WITH:**

_____ Fall, _____ Spring, _____ 2025 _____ Summer: _____ Academic Year

13. **IS THIS A "SPECIAL TOPICS" COURSE?** _____ Yes ___ **No**

14. **EXPLANATION OF NEED FOR THE SPECIFIC COURSE:** New BAE 501 is a required course for the MS degree program in Biological and Agriculture Engineering.

15. **RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:**

NA

16. **COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:**

NA

17. **INSTRUCTIONAL STAFF (if non-faculty, attach Vita):**

18. **COURSE ASSESSMENT PLAN**

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. **COURSE SYLLABUS AND TEXT REFERENCE:**

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 501
Course Title: Agricultural Systems Analysis (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 501 Agricultural Systems Analysis: Application of data analytic thinking and data science techniques to the analysis and management of technical systems in agriculture; introduction to supervised and unsupervised methods applied to business problems in the food and agricultural sectors.

Prerequisite: Graduate classification.

Credits 3.000

3.000 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 501 Agricultural Systems Analysis, the student will be able to:

1. Use Application of data analytic thinking and data science techniques to the analysis and management of technical systems in agriculture.
2. Introduction to supervised and unsupervised methods applied to business problems in the food and agricultural sectors



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

CHAIRPERSON

APPROVED:

(Chairperson's Signature)

Jyotica Batra

04/30/2024

(Date)

DEAN APPROVED

(Dean's signature)

Chi Shen

05/02/24

(Date)

GRADUATE COUNCIL

APPROVED

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 514
2. NEW COURSE TITLE: Renewable Energy Conversions
3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: Managing energy/power systems through engineering and technical aspects of quantifying and designing the suitability of several types of renewable energy resources; providing new insights of vast resources that future engineers can harness to augment diminishing supplies of non-renewable energy. Prerequisites: [PHY 320](#) or approval of instructor. Credits 3. 2 Lecture Hours. 2 Lab Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS: **BAE 514**
Managing energy/power systems through engineering and technical aspects of quantifying and designing the suitability of several types of renewable energy resources; providing new insights of vast resources that future engineers can harness to augment diminishing supplies of non-renewable energy. Prerequisites: [PHY 320](#) or approval of instructor. Credits 3. 2 Lecture Hours. 2 Lab Hours.

5. PREREQUISITES: [PHY 320](#) or approval of instructor.

6. REQUIRED COURSE: Yes No

7. CREDITS: (a) Number 3

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: Yes No

(d) Grading systems permitted: A-F P/F Credit/No Credit

Exceptions: _____

8. Course Level: Elementary
 Intermediate
 Intermediate/Advanced
 Advanced

9. Delivery Method: Online
 Hybrid (Part online and part in person on a regular basis)
 Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: Each semester
 Annually
 Biennially
 Occasionally

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

12. STARTING WITH:

_____ Fall, _____ Spring, _____ 2025 _____ Summer: _____ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? _____ Yes _____ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 514 level required course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 514
Course Title: Renewable Energy Conversions (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 514 Renewable Energy Conversions

Managing energy/power systems through engineering and technical aspects of quantifying and designing the suitability of several types of renewable energy resources; providing new insights of vast resources that future engineers can harness to augment diminishing supplies of non-renewable energy.

Prerequisites: [PHY 320](#) or approval of instructor.

Credits 3.

2 Lecture Hours.

2 Lab Hours

Learning Outcomes:

At the conclusion of BAE 514 Renewable Energy Conversions, the student will be able to:

1. Managing energy/power systems through engineering and technical aspects of quantifying and designing the suitability of several types of renewable energy resources;
2. providing new insights of vast resources that future engineers can harness to augment diminishing supplies of non-renewable energy.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee) _____ (Date) _____

CHAIRPERSON

APPROVED:

(Chairperson's Signature) _____ (Date) _____

Jyotica Batra

04/30/2024

Chi Shen

(Date)

05/02/2024

DEAN APPROVED

(Dean's signature)

(Date)

GRADUATE COUNCIL

APPROVED

(Director of Graduate Studies Signature) _____ (Date) _____

1. NEW COURSE NUMBER: BAE 517

2. NEW COURSE TITLE: Fundamentals of Nanoscale Biological Engineering

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: **BAE 517**
Fundamentals of Nanoscale Biological Engineering: Nanostructures, nanofabrication methods, instrumentation and applications pertinent to Biological, Food and Bioenergy systems; provides opportunity to identify and utilize key tools available for fabricating, manipulating and analysis of nanostructures used in Biological Engineering applications. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS: **BAE 517**
Fundamentals of Nanoscale Biological Engineering: Nanostructures, nanofabrication methods, instrumentation and applications pertinent to Biological, Food and Bioenergy systems; provides opportunity to identify and utilize key tools available for fabricating, manipulating and analysis of nanostructures used in Biological Engineering applications. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.

5. PREREQUISITES: Graduate Classification

6. REQUIRED COURSE: ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
× ___ Intermediate/Advanced
___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

12. STARTING WITH:

_____ Fall, _____ Spring, _____ 2025 _____ Summer: _____ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? _____ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 517 level required course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology

Course: BAE 517

Course Title: BAE 517 Fundamentals of Nanoscale Biological Engineering (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 517 Fundamentals of Nanoscale Biological Engineering: Nanostructures, nanofabrication methods, instrumentation and applications pertinent to Biological, Food and Bioenergy systems; provides opportunity to identify and utilize key tools available for fabricating, manipulating and analysis of nanostructures used in Biological Engineering applications.

Prerequisite: Graduate classification.

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 517 Fundamentals of Nanoscale Biological Engineering, the student will be able to:

1. Understanding of nanostructures, nanofabrication methods, instrumentation and applications pertinent to Biological, Food and Bioenergy systems;
2. provides opportunity to identify and utilize key tools available for fabricating, manipulating and analysis of nanostructures used in Biological Engineering applications.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED: _____ (Date)
(Signature of Program Coordinator or Chair of Program Curriculum Committee)

CHAIRPERSON *Jyotica Batra* _____ **04/30/2024**
APPROVED: _____ (Date)
(Chairperson's Signature)

Chi Shen _____ **05/02/2024**

DEAN APPROVED _____ (Date)
(Dean's signature)

GRADUATE COUNCIL
APPROVED _____ (Date)
(Director of Graduate Studies Signature)

1. NEW COURSE NUMBER: BAE 520
2. NEW COURSE TITLE: Food Rheology
3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: **BAE 520 Food Rheology:** Principles of elasticity, viscous flow and visco-elasticity applied to solid and liquid food materials; experimental determination of rheological properties using fundamental methods and empirical textural measurements; applications to food engineering research, textural measurement and quality control. Credits 3. 3 Lecture Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

Prerequisites: EGR 220 or BAE 422 ; PHY 211 or equivalent; graduate classification; or approval from instructor

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS: **BAE 520 Food Rheology**: Principles of elasticity, viscous flow and visco-elasticity applied to solid and liquid food materials; experimental determination of rheological properties using fundamental methods and empirical textural measurements; applications to food engineering research, textural measurement and quality control.

Prerequisites: EGR 220 or BAE 422 ; PHY 211 or equivalent; graduate classification; or approval from instructor Credits 3. 3 Lecture Hours.

5. PREREQUISITES: EGR 220 or BAE 422 ; PHY 211 or equivalent; graduate classification; or approval from instructor

6. REQUIRED COURSE: ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
× ___ Intermediate/Advanced
___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

12. STARTING WITH:

_____ Fall, _____ Spring, _____ 2025 _____ Summer: _____ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? _____ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 520 level required course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 520
Course Title: Food Rheology (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 520 Food Rheology: Principles of elasticity, viscous flow and visco-elasticity applied to solid and liquid food materials; experimental determination of rheological properties using fundamental methods and empirical textural measurements; applications to food engineering research, textural measurement and quality control.

Prerequisites: EGR 220 or BAE 422 ; PHY 211 or equivalent; graduate classification; or approval from instructor

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 520 Food Rheology, the student will be able to:

1. Apply principles of elasticity, viscous flow and visco-elasticity applied to solid and liquid food materials
2. determination of rheological properties using fundamental methods and empirical textural measurements;
3. Applying to food engineering research, textural measurement and quality control.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology _____

DATE PREPARED: 04/30/2024 _____

PRIMARY AUTHOR(S): Jyotica Batra _____

ACADEMIC PROGRAM

FACULTY APPROVED: _____

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

CHAIRPERSON

APPROVED: _____

(Chairperson's Signature)

04/30/2024

(Date)

Jyotica Batra

DEAN APPROVED

(Dean's signature)

Chi Shen

05/02/2024

(Date)

GRADUATE COUNCIL

APPROVED

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 522

2. NEW COURSE TITLE: Experimental Methods in Bio. & Ag. Engineering

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: **BAE 522**

Experimental Methods in Bio. & Ag. Engineering: Planning and carrying out empirical research with appropriate application of statistical methods for experimental design and analysis; experimental design, data analysis, hypothesis testing, and experimental errors. Prerequisites: MAT 200 or equivalent with approval of instructor. Credits 3. 3 Lecture Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS: **BAE 522**
Experimental Methods in Bio. & Ag. Engineering: Planning and carrying out empirical research with appropriate application of statistical methods for experimental design and analysis; experimental design, data analysis, hypothesis testing, and experimental errors. Prerequisites: MAT 200 or equivalent with approval of instructor. Credits 3. 3 Lecture Hours.

5. PREREQUISITES: MAT 200 or equivalent with approval of instructor. Credits 3. 3 Lecture Hours.

6. REQUIRED COURSE: Yes No

7. CREDITS: (a) Number 3

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: Yes No

(d) Grading systems permitted: A-F P/F Credit/No Credit

Exceptions: _____

8. Course Level: Elementary
 Intermediate
 Intermediate/Advanced
 Advanced

9. Delivery Method: Online
 Hybrid (Part online and part in person on a regular basis)
 Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: Each semester
 Annually
 Biennially
 Occasionally

12. STARTING WITH:

Fall, Spring, 2025 Summer: Academic Year

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

13. IS THIS A "SPECIAL TOPICS" COURSE? _____ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 522 level required course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology

Course: BAE 522

Course Title: Experimental Methods in Bio. & Ag. Engineering: (3)
Syllabus

Professor: TBD

Semester: TBD

Office: TBD

Class Time: TBD

Office Phone: TBD

Classroom: TBD

Email: TBD

Office Hours: TBD

University Catalogue Description:

BAE 522 Experimental Methods in Bio. & Ag. Engineering: Planning and carrying out empirical research with appropriate application of statistical methods for experimental design and analysis; experimental design, data analysis, hypothesis testing, and experimental errors.

Prerequisites: MAT 200 or equivalent with approval of instructor.

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 522 Experimental Methods in Bio. & Ag. Engineering, the student will be able to:

1. Plan and carry out empirical research with appropriate application of statistical methods for experimental design and analysis;
2. Plan and carry out experimental design, data analysis, hypothesis testing, and experimental errors.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee) _____ (Date) _____

CHAIRPERSON

APPROVED:

(Chairperson's Signature) _____ (Date) _____

Jyotica Batra

04/30/2024

Chi Shen

05/02/2024

DEAN APPROVED

(Dean's signature)

(Date) _____

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature) _____ (Date) _____

1. NEW COURSE NUMBER: BAE 525

2. NEW COURSE TITLE: Food Process Engineering

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: **BAE 525 Food Process Engineering:** Application of engineering fundamentals to the design of novel/advanced food processing systems including food irradiation, advances in thermal process, food freezing, food dehydration. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS: **BAE 525 Food Process Engineering:** Application of engineering fundamentals to the design of novel/advanced food processing systems including food irradiation, advances in thermal process, food freezing, food dehydration. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours

5. PREREQUISITES: Graduate Classification

6. REQUIRED COURSE: Yes No

7. CREDITS: (a) Number 3

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: Yes No

(d) Grading systems permitted: A-F P/F Credit/No Credit

Exceptions: _____

8. Course Level: Elementary
 Intermediate
 Intermediate/Advanced
 Advanced

9. Delivery Method: Online
 Hybrid (Part online and part in person on a regular basis)
 Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: Each semester
 Annually
 Biennially
 Occasionally

12. STARTING WITH:

Fall, Spring, 2025 Summer: Academic Year

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

13. IS THIS A "SPECIAL TOPICS" COURSE? ___ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 525 level required course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 525
Course Title: Food process Engineering_(3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 525 Food Process Engineering: Application of engineering fundamentals to the design of novel/advanced food processing systems including food irradiation, advances in thermal process, food freezing, food dehydration.

Prerequisite: Graduate classification.

Credits 3.

3 Lecture Hours

Learning Outcomes:

At the conclusion of BAE 525 Food Process Engineering, the student will be able to:

1. Apply the engineering fundamentals to the design of novel/advanced food processing systems including food irradiation, advances in thermal process, food freezing, food dehydration.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee) _____ (Date) _____

CHAIRPERSON *Jyotica Batra* **APPROVED:** _____ **04/30/2024**
(Chairperson's Signature) _____ (Date) _____

DEAN APPROVED *Chi Shen* **APPROVED:** _____ **05/02/2024**
(Dean's signature) _____ (Date) _____

GRADUATE COUNCIL
APPROVED _____
(Director of Graduate Studies Signature) _____ (Date) _____

1. NEW COURSE NUMBER: BAE 527

2. NEW COURSE TITLE: Engineering Aspects of Packaging

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: **BAE 527**
Engineering Aspects of Packaging: Introduction to properties and engineering aspects of materials for use as components of a package and/or packaging system; principles of design and development of packages; evaluation of product-package-environment interaction mechanisms; testing methods; environmental concerns; regulations. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

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4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS: **BAE 527**
Engineering Aspects of Packaging: Introduction to properties and engineering aspects of materials for use as components of a package and/or packaging system; principles of design and development of packages; evaluation of product-package-environment interaction mechanisms; testing methods; environmental concerns; regulations. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.

5. PREREQUISITES: Graduate Classification

6. REQUIRED COURSE: Elective ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
× ___ Intermediate/Advanced
___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

13. IS THIS A "SPECIAL TOPICS" COURSE? ___ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 527 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 527
Course Title: Engineering Aspects of Packaging_(3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 527 Engineering Aspects of Packaging: Introduction to properties and engineering aspects of materials for use as components of a package and/or packaging system; principles of design and development of packages; evaluation of product-package-environment interaction mechanisms; testing methods; environmental concerns; regulations.

Prerequisite: Graduate classification.

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 527 Engineering Aspects of Packaging, the student will be able to:

1. Introduce to properties and engineering aspects of materials for use as components of a package and/or packaging system;
2. learn principles of design and development of packages; evaluation of product-package-environment interaction mechanisms; testing methods; environmental concerns; regulations.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED: _____

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

CHAIRPERSON

APPROVED: _____

(Chairperson's Signature)

04/30/2024

(Date)

Jyotica Batra

Chi Shen

05/02/2024

DEAN APPROVED

(Dean's signature)

(Date)

GRADUATE COUNCIL

APPROVED

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 531

2. NEW COURSE TITLE: Bioprocesses and Separations in Biotechnology

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: **BAE 531**
Bioprocesses and Separations in Biotechnology: Application of engineering principles to recovery and purification of biological compounds derived from cell grown in bioreactors, transgenic animals, and plants. Process development, design, and scale up of downstream processes used in biotechnology and pharmaceutical industry. Emphasis on extraction, sedimentation, membrane filtration, precipitation, and liquid chromatography. Prerequisites: Graduate classification or approval of instructor. Credits 3. 2 Lecture Hours. 2 Lab Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS: **BAE 531**
Bioprocesses and Separations in Biotechnology: Application of engineering principles to recovery and purification of biological compounds derived from cell grown in bioreactors, transgenic animals, and plants. Process development, design, and scale up of downstream processes used in biotechnology and pharmaceutical industry. Emphasis on extraction, sedimentation, membrane filtration, precipitation, and liquid chromatography. Prerequisites: Graduate classification or approval of instructor. Credits 3. 2 Lecture Hours. 2 Lab Hours.

5. PREREQUISITES: Graduate Classification

6. REQUIRED COURSE: Elective___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

13. IS THIS A "SPECIAL TOPICS" COURSE? _____ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 531 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology

Course: BAE 531

Course Title: Bioprocesses and Separations in Biotechnology (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 531 Bioprocesses and Separations in Biotechnology: Application of engineering principles to recovery and purification of biological compounds derived from cell grown in bioreactors, transgenic animals, and plants. Process development, design, and scale up of downstream processes used in biotechnology and pharmaceutical industry. Emphasis on extraction, sedimentation, membrane filtration, precipitation, and liquid chromatography.

Prerequisites: Graduate classification or approval of instructor.

Credits 3.

2 Lecture Hours.

2 Lab Hours.

Learning Outcomes:

At the conclusion of BAE 531 Bioprocesses and Separations in Biotechnology, the student will be able to:

1. Apply the engineering principles to recovery and purification of biological compounds derived from cell grown in bioreactors, transgenic animals, and plants.
2. Process development, design, and scale up of downstream processes used in biotechnology and pharmaceutical industry.
3. Emphasis on understanding extraction, sedimentation, membrane filtration, precipitation, and liquid chromatography.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee) _____ (Date) _____

Jyotica Batra

CHAIRPERSON _____ **04/30/2024**

APPROVED: _____

(Chairperson's Signature) _____ (Date) _____

Chi Shen

DEAN APPROVED _____ **05/02/2024**

(Dean's signature) _____ (Date) _____

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature) _____ (Date) _____

1. NEW COURSE NUMBER: BAE 542
2. NEW COURSE TITLE: Water-Energy-Food Nexus: Toward Sustainable Resource Management
3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: **BAE 542 Water-Energy-Food Nexus: Toward Sustainable Resource Management:** Principles and application of the Water-Energy-Food nexus to state, national and international Water-Energy-Food securities and the interlinkages between them; exploration of quantitative framework to develop and assess sustainable tradeoffs of resources; hands on experiences; relevant real world projects or case



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

studies. Prerequisites: Strong analytical background; approval of instructor. Credits 3. 3 Lecture Hours.

4. **DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS BAE 542 Water-Energy-Food Nexus: Toward Sustainable Resource Management:** Principles and application of the Water-Energy-Food nexus to state, national and international Water-Energy-Food securities and the interlinkages between them; exploration of quantitative framework to develop and assess sustainable tradeoffs of resources; hands on experiences; relevant real world projects or case studies. Prerequisites: Strong analytical background; approval of instructor. Credits 3. 3 Lecture Hours.

5. **PREREQUISITES:** Strong analytical background; approval of instructor.

6. **REQUIRED COURSE:** Elective ___ **Yes** ___ No

7. **CREDITS:** (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. **Course Level:** ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. **Delivery Method:** ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. **CROSSLISTING DEPARTMENTS** (attach supporting letters):

11. **SCHEDULING PLAN:** ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. **STARTING WITH:**

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

_____ Fall, _____ Spring, _____ 2025 _____ Summer: _____ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? _____ Yes _____ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 542 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 542

Course Title: Water-Energy-Food Nexus: Toward Sustainable Resource Management (3)
Syllabus

Professor: TBD

Semester: TBD

Office: TBD

Class Time: TBD

Office Phone: TBD

Classroom: TBD

Email: TBD

Office Hours: TBD

University Catalogue Description:

BAE 542 Water-Energy-Food Nexus: Toward Sustainable Resource Management: Principles and application of the Water-Energy-Food nexus to state, national and international Water-Energy-Food securities and the interlinkages between them; exploration of quantitative framework to develop and assess sustainable tradeoffs of resources; hands on experiences; relevant real world projects or case studies.

Prerequisites: Strong analytical background; approval of instructor.

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 542 Water-Energy-Food Nexus: Toward Sustainable Resource Management, the student will be able to:

1. Apply the Principles and application of the Water-Energy-Food nexus to state, national and international Water-Energy-Food securities and the interlinkages between them;
2. exploration of quantitative framework to develop and assess sustainable tradeoffs of resources; hands on experiences; relevant real world projects or case studies.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED: _____

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

CHAIRPERSON

APPROVED: _____

(Chairperson's Signature)

04/30/2024

(Date)

Jyotica Batra

Chi Shen

05/02/2024

DEAN APPROVED

(Dean's signature)

(Date)

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 551
2. NEW COURSE TITLE: Geographic Information System for Resource Management
3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: **BAE 551/ENV 508 Geographic Information System for Resource Management:** Geographic Information System (GIS) approach to the integration of spatial and attribute data to study the capture, analysis, manipulation and portrayal of natural resource data; examination of data types/formats, as well as the integration of GIS with remote sensing and Global Positioning System; laboratory includes extensive use of GIS applications to conduct analyses of topics in natural



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

resources. Prerequisites: Graduate classification, Cross Listing: ENV 508 and BAE 551 Credits 3. 2
Lecture Hours. 2 Lab Hours

4. **DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS BAE 551/ENV 508 Geographic Information System for Resource Management:** Geographic Information System (GIS) approach to the integration of spatial and attribute data to study the capture, analysis, manipulation and portrayal of natural resource data; examination of data types/formats, as well as the integration of GIS with remote sensing and Global Positioning System; laboratory includes extensive use of GIS applications to conduct analyses of topics in natural resources. Prerequisites: Graduate classification, Cross Listing: ENV 508 and BAE 551 Credits 3. 2
Lecture Hours. 2 Lab Hours

5. **PREREQUISITES:** Graduate classification.

6. **REQUIRED COURSE:** Elective ___ **Yes** ___ No

7. **CREDITS:** (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. **Course Level:** ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. **Delivery Method:** ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. **CROSSLISTING DEPARTMENTS** (attach supporting letters): ENV 508

11. **SCHEDULING PLAN:** ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

12. STARTING WITH:

_____ Fall, _____ Spring, _____ 2025 _____ Summer: _____ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? _____ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 551 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 551/ENV 508

Course Title: Geographic Information System for Resource Management (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 551/ENV 508 Geographic Information System for Resource Management: Geographic Information System (GIS) approach to the integration of spatial and attribute data to study the capture, analysis, manipulation and portrayal of natural resource data; examination of data types/formats, as well as the integration of GIS with remote sensing and Global Positioning System; laboratory includes extensive use of GIS applications to conduct analyses of topics in natural resources.

Prerequisites: Graduate classification, Cross Listing: ENV 508 and BAE 551

Credits 3.

2 Lecture Hours.

2 Lab Hours

Learning Outcomes:

At the conclusion of BAE 551 Geographic Information System for Resource Management, the student will be able to:

1. Geographic Information System (GIS) approach to the integration of spatial and attribute data to study the capture, analysis, manipulation and portrayal of natural resource data;
2. Examine data types/formats, as well as the integration of GIS with remote sensing and Global Positioning System;
3. laboratory includes extensive use of GIS applications to conduct analyses of topics in natural resources.

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

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**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee) _____ (Date) _____

CHAIRPERSON

APPROVED:

(Chairperson's Signature) _____ (Date) _____

Jyotica Batra

04/30/2024

DEAN APPROVED

(Dean's signature)

Chi Shen

05/02/2024

(Date)

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature) _____ (Date) _____

1. NEW COURSE NUMBER: BAE 552
2. NEW COURSE TITLE: Geographic Information System for Resource Management
3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: **BAE 552/ENV 585 Advanced Topics in Precision Ag. Systems:** Advanced GIS topics with a focus on modeling actual GIS applications including relational and database theory, design and implementation and its connection to GIS; surface analysis with digital terrain models; and an introduction to spatial statistics. Prerequisite: BAE 551. Cross Listing: ENV 585/BAE 552. Credits 3. 2 Lecture Hours. 2 Lab Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 552/ENV 585 Advanced Topics in Precision Ag. Systems:** Advanced GIS topics with a focus on modeling actual GIS applications including relational and database theory, design and implementation and its connection to GIS; surface analysis with digital terrain models; and an introduction to spatial statistics. Prerequisite: BAE 551. Cross Listing: ENV 585/BAE 552. Credits 3. 2 Lecture Hours. 2 Lab Hours.

5. PREREQUISITES: BAE 551

6. REQUIRED COURSE: Elective ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters): ENV 585

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

13. IS THIS A "SPECIAL TOPICS" COURSE? ___ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 552 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 552/ENV 585
Course Title: Advanced Topics in Precision Ag. Systems_(3)
Syllabus

Professor: TBD

Semester: TBD

Office: TBD

Class Time: TBD

Office Phone: TBD

Classroom: TBD

Email: TBD

Office Hours: TBD

University Catalogue Description:

BAE 552/ENV 585 Advanced Topics in Precision Ag. Systems: Advanced GIS topics with a focus on modeling actual GIS applications including relational and database theory, design and implementation and its connection to GIS; surface analysis with digital terrain models; and an introduction to spatial statistics.

Prerequisite: BAE 551. Cross Listing: ENV 585/BAE 552.

Credits 3.

2 Lecture Hours.

2 Lab Hours.

Learning Outcomes:

At the conclusion of BAE 552 Advanced Topics in Precision Ag. Systems, the student will be able to:

1. Will focus on advance topics of GIS on modeling actual GIS applications including relational and database theory, design and implementation and its connection to GIS;
2. Apply surface analysis with digital terrain models; and an introduction to spatial statistics.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED: _____

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

CHAIRPERSON

APPROVED: _____

(Chairperson's Signature)

04/30/2024

(Date)

Jyotica Batra

Chi Shen

05/02/2024

DEAN APPROVED

(Dean's signature)

(Date)

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 555

2. NEW COURSE TITLE: Principles of Modern Optical Spectroscopy

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: **BAE 555**
Principles of Modern Optical Spectroscopy: Optical spectroscopic techniques—their principles, based on the fundamentals of electromagnetism, interaction of light with matter and modern physics; Laser Induced Fluorescence; fluorescence correlation spectroscopy—single molecule spectroscopy; Raman spectroscopy ; optical coherence tomography; low coherence speckle interferometry; optical tweezers; imaging and microscopy beyond diffraction limit. Prerequisites: Graduate classification. Credits 3. 3 Lecture Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 555**

Principles of Modern Optical Spectroscopy: Optical spectroscopic techniques—their principles, based on the fundamentals of electromagnetism, interaction of light with matter and modern physics; Laser Induced Fluorescence; fluorescence correlation spectroscopy—single molecule spectroscopy; Raman spectroscopy; optical coherence tomography; low coherence speckle interferometry; optical tweezers; imaging and microscopy beyond diffraction limit. Prerequisites: Graduate classification. Credits 3. 3 Lecture Hours.

5. PREREQUISITES: Graduate Classification

6. REQUIRED COURSE: Elective ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

_____ Fall, _____ Spring, _____ 2025 _____ Summer: _____ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? _____ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 555 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology

Course: BAE 555

Course Title: Principles of Modern Optical Spectroscopy_(3)
Syllabus

Professor: TBD

Semester: TBD

Office: TBD

Class Time: TBD

Office Phone: TBD

Classroom: TBD

Email: TBD

Office Hours: TBD

University Catalogue Description:

BAE 555 Principles of Modern Optical Spectroscopy: Optical spectroscopic techniques—their principles, based on the fundamentals of electromagnetism, interaction of light with matter and modern physics; Laser Induced Fluorescence; fluorescence correlation spectroscopy—single molecule spectroscopy; Raman spectroscopy ; optical coherence tomography; low coherence speckle interferometry; optical tweezers; imaging and microscopy beyond diffraction limit.

Prerequisites: Graduate classification.

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 555 Principles of Modern Optical Spectroscopy, the student will be able to:

1. Will techniques—their principles, based on the fundamentals of electromagnetism, interaction of light with matter and modern physics; Laser Induced Fluorescence;
2. fluorescence correlation spectroscopy—single molecule spectroscopy; Raman spectroscopy ; optical coherence tomography; low coherence speckle interferometry; optical tweezers; imaging and microscopy beyond diffraction limit.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee) _____ (Date) _____


CHAIRPERSON _____ **04/30/2024**
APPROVED: _____
 (Chairperson's Signature) _____ (Date) _____


DEAN APPROVED _____ **05/02/2024**
 (Dean's signature) _____ (Date) _____

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature) _____ (Date) _____

1. NEW COURSE NUMBER: BAE 561
2. NEW COURSE TITLE: Unit Operations in Food Processing
3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG: **BAE 561 Unit Operations in Food Processing:** Design of food process engineering systems; basic concepts of rheology and physical properties of foods; fundamentals of heat and mass transfer and process control. Prerequisites: EGR 320, PHY 320. Credits 3. 2 Lecture Hours. 2 Lab Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 561 Unit Operations in Food Processing**: Design of food process engineering systems; basic concepts of rheology and physical properties of foods; fundamentals of heat and mass transfer and process control. Prerequisites: EGR 320, PHY 320. Credits 3. 2 Lecture Hours. 2 Lab Hours.

5. PREREQUISITES: EGR 320, PHY 320

6. REQUIRED COURSE: Elective ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? ___ Yes ___ **No**

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 561 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 561
Course Title: Units Operations in Food Processing_(3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 561 Unit Operations in Food Processing: Design of food process engineering systems; basic concepts of rheology and physical properties of foods; fundamentals of heat and mass transfer and process control.

Prerequisites: EGR 320, PHY 320.

Credits 3.

2 Lecture Hours.

2 Lab Hours.

Learning Outcomes:

At the conclusion of BAE 561 Units Operations in Food Processing, the student will be able to:

1. Design of food process engineering systems
2. understand basic concepts of rheology and physical properties of foods;
3. and learn fundamentals of heat and mass transfer and process control.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED: _____

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

CHAIRPERSON

APPROVED: _____

(Chairperson's Signature)

04/30/2024

(Date)

DEAN APPROVED

(Dean's signature)

05/02/2024

(Date)

GRADUATE COUNCI

APPROVED _____

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 562

2. NEW COURSE TITLE: Statistical Methods in Bio. & Ag. Engineering

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG **BAE 562**
Statistical Methods in Bio. & Ag. Engineering: Statistical methods applied to problems in biological and agricultural engineering; parameter estimation; probability distribution fitting; time-series analysis; random variable generation; uncertainty analysis. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 562**
Statistical Methods in Bio. & Ag. Engineering: Statistical methods applied to problems in biological and agricultural engineering; parameter estimation; probability distribution fitting; time-series analysis; random variable generation; uncertainty analysis. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.

5. PREREQUISITES: Graduate Classification

6. REQUIRED COURSE: Elective ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? ___ Yes ___ **No**

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 562 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology

Course: BAE 562

Course Title: Statistical Methods in Bio & Ag. Engineering_(3)
Syllabus

Professor: TBD

Semester: TBD

Office: TBD

Class Time: TBD

Office Phone: TBD

Classroom: TBD

Email: TBD

Office Hours: TBD

University Catalogue Description:

BAE 562 Statistical Methods in Bio. & Ag. Engineering: Statistical methods applied to problems in biological and agricultural engineering; parameter estimation; probability distribution fitting; time-series analysis; random variable generation; uncertainty analysis.

Prerequisite: Graduate classification.

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 562 Statistical Methods in Bio. & Ag. Engineering, the student will be able to:

1. Apply statistical methods to problems in biological and agricultural engineering;
2. parameter estimation; probability distribution fitting; time-series analysis; random variable generation; uncertainty analysis.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED: _____

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

CHAIRPERSON

APPROVED: _____

(Chairperson's Signature)

04/30/2024

(Date)

Jyotica Batra

Chi Shen

05/02/2024

DEAN APPROVED

(Dean's signature)

(Date)

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 565

2. NEW COURSE TITLE: Design of Biological Waste Treatment Systems

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG **BAE 565 Design of Biological Waste Treatment Systems:** Management and treatment of high organic content waste streams, with emphasis on agricultural; municipal, and agro-Industry wastewater; engineering design of biological waste treatment processes: resource recovery from waste streams: recycle and reuse of finished effluents. Prerequisite: Graduate classification or approval of instructor. Credits 3. 3 Lecture Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 565**

Design of Biological Waste Treatment Systems: Management and treatment of high organic content waste streams, with emphasis on agricultural; municipal, and agro-Industry wastewater; engineering design of biological waste treatment processes: resource recovery from waste streams: recycle and reuse of finished effluents. Prerequisite: Graduate classification or approval of instructor. Credits 3. 3 Lecture Hours.

5. PREREQUISITES: Graduate Classification or approval of instructor

6. REQUIRED COURSE: Elective ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

13. IS THIS A "SPECIAL TOPICS" COURSE? ___ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 565 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology

Course: BAE 565

Course Title: Design of Biological Waste Treatment Systems (3)
Syllabus

Professor: TBD

Semester: TBD

Office: TBD

Class Time: TBD

Office Phone: TBD

Classroom: TBD

Email: TBD

Office Hours: TBD

University Catalogue Description:

BAE 565 Design of Biological Waste Treatment Systems: Management and treatment of high organic content waste streams, with emphasis on agricultural; municipal, and agro-Industry wastewater; engineering design of biological waste treatment processes: resource recovery from waste streams: recycle and reuse of finished effluents.

Prerequisite: Graduate classification or approval of instructor.

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 565 Design of Biological Waste Treatment Systems, the student will be able to:

1. Learn management and treatment of high organic content waste streams, with emphasis on agricultural; municipal, and agro-Industry wastewater;
2. Able to make engineering design of biological waste treatment processes: resource recovery from waste streams: recycle and reuse of finished effluents.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee) _____ (Date) _____

CHAIRPERSON

APPROVED:

(Chairperson's Signature) _____ (Date) _____

Jyotica Batra

04/30/2024

DEAN APPROVED

(Dean's signature)

Chi Shen

05/02/2024

(Date)

GRADUATE COUNCIL

APPROVED

(Director of Graduate Studies Signature) _____ (Date) _____

1. NEW COURSE NUMBER: BAE 569
2. NEW COURSE TITLE: Water Quality Engineering
3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG **BAE 569 Water Quality Engineering:** Nonpoint source pollution processes including transport mechanisms and contaminant fate; design of best management practices for abating nonpoint source pollution. Prerequisites: graduate classification. Credits 3. 3 Lecture Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 569 Water Quality Engineering**: Nonpoint source pollution processes including transport mechanisms and contaminant fate; design of best management practices for abating nonpoint source pollution. Prerequisites: graduate classification. Credits 3. 3 Lecture Hours.

5. PREREQUISITES: Graduate Classification

6. REQUIRED COURSE: Elective ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? ___ Yes ___ **No**

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 569 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 569
Course Title: Water Quality Engineering (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 569 Water Quality Engineering: Nonpoint source pollution processes including transport mechanisms and contaminant fate; design of best management practices for abating nonpoint source pollution.

Prerequisites: graduate classification.

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 569 Water Quality Engineering, the student will be able to:

1. Understands nonpoint source pollution processes including transport mechanisms and contaminant fate;
2. Able to design of best management practices for abating nonpoint source pollution.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

Jyotica Batra

CHAIRPERSON

APPROVED:

(Chairperson's Signature)

04/30/2024

(Date)

Chi Shen

DEAN APPROVED

(Dean's signature)

05/02/2024

(Date)

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 570

2. NEW COURSE TITLE: Air Pollution Engineering

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG **BAE 570 Air Pollution Engineering:** Current topics in air pollution engineering including design and operation of air pollution abatement systems (cyclone, bag filters and scrubbers), emission factors, dispersion modeling, permitting, odor sensing and control, EPA/State Air Pollution Regulatory Agency (SAPRA), TSP, PM10, and PM2.5. Prerequisites: Graduate classification or approval of instructor. Credits 3. 3 Lecture Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 570 Air Pollution Engineering**: Current topics in air pollution engineering including design and operation of air pollution abatement systems (cyclone, bag filters and scrubbers), emission factors, dispersion modeling, permitting, odor sensing and control, EPA/State Air Pollution Regulatory Agency (SAPRA), TSP, PM10, and PM2.5. Prerequisites: Graduate classification or approval of instructor. Credits 3. 3 Lecture Hours.

5. PREREQUISITES: Graduate Classification or approval of instructor

6. REQUIRED COURSE: Elective ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

13. IS THIS A "SPECIAL TOPICS" COURSE? ___ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 570 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 570
Course Title: Air Pollution Engineering (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 570 Air Pollution Engineering: Current topics in air pollution engineering including design and operation of air pollution abatement systems (cyclone, bag filters and scrubbers), emission factors, dispersion modeling, permitting, odor sensing and control, EPA/State Air Pollution Regulatory Agency (SAPRA), TSP, PM10, and PM2.5.

Prerequisites: Graduate classification or approval of instructor.

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 570 Air Pollution Engineering, the student will be able to:

1. Focus on current topics in air pollution engineering including design
2. Engineering operation of air pollution abatement systems (cyclone, bag filters and scrubbers), emission factors, dispersion modeling, permitting, odor sensing and control, EPA/State Air Pollution Regulatory Agency (SAPRA), TSP, PM10, and PM2.5.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED: _____

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

CHAIRPERSON

APPROVED: _____

(Chairperson's Signature)

Jyotica Batra

04/30/2024

(Date)

DEAN APPROVED

(Dean's signature)

Chi Shen

05/02/2024

(Date)

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 572

2. NEW COURSE TITLE: Small Watershed Hydrology

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG **BAE 572 Small Watershed Hydrology**: Hydrology of small agricultural watersheds; precipitation frequency analysis; infiltration; runoff; erosion theory; sediment transport theory; evapotranspiration, and use of hydrological models. Prerequisites: Graduate classification. Credits 3. 3 Lecture Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 572 Small Watershed Hydrology**: Hydrology of small agricultural watersheds; precipitation frequency analysis; infiltration; runoff; erosion theory; sediment transport theory; evapotranspiration, and use of hydrological models. Prerequisites: Graduate classification. Credits 3. 3 Lecture Hours.

5. PREREQUISITES: Graduate Classification

6. REQUIRED COURSE: Elective ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? ___ Yes ___ **No**

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 572 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 572
Course Title: Small Watershed Hydrology (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 572 Small Watershed Hydrology: Hydrology of small agricultural watersheds; precipitation frequency analysis; infiltration; runoff; erosion theory; sediment transport theory; evapotranspiration, and use of hydrological models.

Prerequisites: Graduate classification.

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 572 Small Watershed Hydrology, the student will be able to:

1. Understand the hydrology of small agricultural watersheds; precipitation frequency analysis; infiltration; runoff; erosion theory;
2. Sediment transport theory; evapotranspiration, and use of hydrological models.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED: _____

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

CHAIRPERSON

APPROVED: _____

(Chairperson's Signature)

04/30/2024

(Date)

Jyotica Batra

Chi Shen

05/02/2024

DEAN APPROVED

(Dean's signature)

(Date)

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 574

2. NEW COURSE TITLE: Vadose Zone Hydrology

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG **BAE 574 Vadose Zone Hydrology:** Fundamental concepts and advanced mathematical and experimental techniques for quantifying water, chemical, microorganism, and heat transport in the vadose zone (between soil surfaces and groundwater); provides a common platform for addressing issues related to soil and water resources, hydrology, geochemistry, microbiology, ecology, hydrogeology, and environmental engineering. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 574**

Vadose Zone Hydrology: Fundamental concepts and advanced mathematical and experimental techniques for quantifying water, chemical, microorganism, and heat transport in the vadose zone (between soil surfaces and groundwater); provides a common platform for addressing issues related to soil and water resources, hydrology, geochemistry, microbiology, ecology, hydrogeology, and environmental engineering. Prerequisite: Graduate classification. Credits 3. 3 Lecture Hours.

5. PREREQUISITES: Graduate Classification

6. REQUIRED COURSE: Elective ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

13. IS THIS A "SPECIAL TOPICS" COURSE? _____ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 574 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 574
Course Title: Vadose Zone Hydrology (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 574 Vadose Zone Hydrology: Fundamental concepts and advanced mathematical and experimental techniques for quantifying water, chemical, microorganism, and heat transport in the vadose zone (between soil surfaces and groundwater); provides a common platform for addressing issues related to soil and water resources, hydrology, geochemistry, microbiology, ecology, hydrogeology, and environmental engineering.

Prerequisite: Graduate classification.

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 574 Vadose Zone Hydrology, the student will be able to:

1. Apply fundamental concepts and advanced mathematical and experimental techniques for quantifying water, chemical, microorganism, and heat transport in the vadose zone (between soil surfaces and groundwater);
2. provides a common platform for addressing issues related to soil and water resources, hydrology, geochemistry, microbiology, ecology, hydrogeology, and environmental engineering.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED: _____

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

CHAIRPERSON

APPROVED: _____

(Chairperson's Signature)

04/30/2024

(Date)

Jyotica Batra

Chi Shen

05/02/2024

DEAN APPROVED

(Dean's signature)

(Date)

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 575

2. NEW COURSE TITLE: Hydrology Across Scale

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG **BAE 575**

Hydrology Across Scale: Advanced concepts of surface and subsurface hydrologic processes, measurements, and modeling techniques across different spatio-temporal scales; contemporary issues related to the soil and water resources, hydrogeology, geochemistry, microbiology, ecology, hydrology, and environmental engineering. Prerequisite: Graduate classification in any engineering, agricultural science or geoscience program with environmental focus. Credits 3. 3 Lecture Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 575**

Hydrology Across Scale: Advanced concepts of surface and subsurface hydrologic processes, measurements, and modeling techniques across different spatio-temporal scales; contemporary issues related to the soil and water resources, hydrogeology, geochemistry, microbiology, ecology, hydrology, and environmental engineering. Prerequisite: Graduate classification in any engineering, agricultural science or geoscience program with environmental focus. Credits 3. 3 Lecture Hours.

5. PREREQUISITES: Graduate classification in any engineering, agricultural science or geoscience program with environmental focus

6. REQUIRED COURSE: Elective Yes No

7. CREDITS: (a) Number 3

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: Yes No

(d) Grading systems permitted: A-F P/F Credit/No Credit

Exceptions: _____

8. Course Level: Elementary
 Intermediate
 Intermediate/Advanced
 Advanced

9. Delivery Method: Online
 Hybrid (Part online and part in person on a regular basis)
 Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: Each semester
 Annually
 Biennially
 Occasionally

12. STARTING WITH:

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

_____ Fall, _____ Spring, _____ 2025 _____ Summer: _____ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? _____ Yes _____ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 575 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 575
Course Title: Hydrology Across Scale (3)
Syllabus

Professor: TBD

Semester: TBD

Office: TBD

Class Time: TBD

Office Phone: TBD

Classroom: TBD

Email: TBD

Office Hours: TBD

University Catalogue Description:

BAE 575 Hydrology Across Scale: Advanced concepts of surface and subsurface hydrologic processes, measurements, and modeling techniques across different spatio-temporal scales; contemporary issues related to the soil and water resources, hydrogeology, geochemistry, microbiology, ecology, hydrology, and environmental engineering.

Prerequisite: Graduate classification in any engineering, agricultural science or geoscience program with environmental focus.

Credits 3.

3 Lecture Hours.

Learning Outcomes:

At the conclusion of BAE 575 Hydrology Across Scale, the student will be able to:

1. Understands advanced concepts of surface and subsurface hydrologic processes, measurements, and modeling techniques across different spatio-temporal scales;
2. Understands contemporary issues related to the soil and water resources, hydrogeology, geochemistry, microbiology, ecology, hydrology, and environmental engineering



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee) _____ (Date) _____

CHAIRPERSON

APPROVED:

(Chairperson's Signature) _____ (Date) _____

Jyotica Batra

04/30/2024

DEAN APPROVED

(Dean's signature)

Chi Shen

05/02/2024

(Date)

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature) _____ (Date) _____

1. NEW COURSE NUMBER: BAE 584

2. NEW COURSE TITLE: Professional Internship

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG **BAE 584**

Professional Internship: An on-the-job supervised experience program, conducted on an individual basis in the area of the student's specialization in mechanized agriculture. Prerequisite: Graduate classification or approval of instructor. Credits 3. 3 Other Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 584**

Professional Internship: An on-the-job supervised experience program, conducted on an individual basis in the area of the student's specialization in mechanized agriculture. Prerequisite: Graduate classification or approval of instructor. Credits 3. 3 Other Hours.

5. PREREQUISITES: Graduate classification or approval of instructor

6. REQUIRED COURSE: Yes No

7. CREDITS: (a) Number 3

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: Yes No

(d) Grading systems permitted: A-F P/F Credit/No Credit

Exceptions: _____

8. Course Level: Elementary
 Intermediate
 Intermediate/Advanced
 Advanced

9. Delivery Method: Online
 Hybrid (Part online and part in person on a regular basis)
 Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: Each semester
 Annually
 Biennially
 Occasionally

12. STARTING WITH:

Fall, Spring, 2025 Summer: Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? Yes No

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 584 level required course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 584
Course Title: Professional Internship (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 584 Professional Internship: An on-the-job supervised experience program, conducted on an individual basis in the area of the student's specialization in mechanized agriculture.

Prerequisite: Graduate classification or approval of instructor.

Credits 3.

3 Other Hours.

Learning Outcomes:

At the conclusion of BAE 584 Professional Internship, the student will be able to:

1. Participate and complete on-the-job supervised experience program, conducted on an individual basis in the area of the student's specialization in mechanized agriculture
2. Learn an ability to function effectively on a team whose members together provide leadership
3. create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee) _____ (Date) _____

CHAIRPERSON *Jyotica Batra* _____ **04/30/2024**
APPROVED: _____
(Chairperson's Signature) _____ (Date)

DEAN APPROVED *Chi Shen* _____ **05/02/2024**
(Dean's signature) _____ (Date)

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature) _____ (Date) _____

1. NEW COURSE NUMBER: BAE 589
2. NEW COURSE TITLE: Special Topics in..
3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG **BAE 589 Special Topics:** Selected topics in an identified area of agricultural engineering. May be repeated for credit. Credits 1 to 3. 1 to 3 Lecture Hours. 0 to 3 Lab Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 589**

Special Topics in.: Selected topics in an identified area of agricultural engineering. May be repeated for credit. Credits 1 to 3. 1 to 3 Lecture Hours. 0 to 3 Lab Hours.

5. PREREQUISITES: Graduate classification

6. REQUIRED COURSE: Elective ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? ___ Yes ___ **No**

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 589 level required elective course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 589
Course Title: Special Topics in. (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 589 Special Topics in. Selected topics in an identified area of agricultural engineering. May be repeated for credit. Credits 1 to 3. 1 to 3 Lecture Hours. 0 to 3 Lab Hours.

Learning Outcomes:

At the conclusion of BAE 589 Professional Internship, the student will be able to:

1. Work on selected topics in an identified area of agricultural engineering
2. Learn an ability to function effectively on a team whose members together provide leadership
3. create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED: _____

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

CHAIRPERSON

APPROVED: _____

(Chairperson's Signature)

Jyotica Batra

04/30/2024

(Date)

DEAN APPROVED

(Dean's signature)

Chi Shen

05/02/2024

(Date)

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 600

2. NEW COURSE TITLE: Research

3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG **BAE 600**

Research: Development of research inquiry and discussion of applicable experimental design, theoretical techniques and methodological principles of conducting original research; evaluation of current research of faculty and students and in engineering and scientific literature. Communication of research proposals and results. May be repeated for credit. Prerequisites: Graduate classification. Credit 1 to 3. 1 to 3 other hours



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 600**

Research: Development of research inquiry and discussion of applicable experimental design, theoretical techniques and methodological principles of conducting original research; evaluation of current research of faculty and students and in engineering and scientific literature. Communication of research proposals and results. May be repeated for credit. Prerequisites: Graduate classification. Credit 1 to 3. 1 to 3 other hours

5. PREREQUISITES: Graduate classification

6. REQUIRED COURSE: Yes No

7. CREDITS: (a) Number 3

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: Yes No

(d) Grading systems permitted: A-F P/F Credit/No Credit

Exceptions: _____

8. Course Level: Elementary
 Intermediate
 Intermediate/Advanced
 Advanced

9. Delivery Method: Online
 Hybrid (Part online and part in person on a regular basis)
 Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: Each semester
 Annually
 Biennially
 Occasionally

12. STARTING WITH:

Fall, Spring, 2025 Summer: Academic Year

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

13. IS THIS A "SPECIAL TOPICS" COURSE? _____ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 600 level required course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 600
Course Title: Research (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 600 Research: Development of research inquiry and discussion of applicable experimental design, theoretical techniques and methodological principles of conducting original research; evaluation of current research of faculty and students and in engineering and scientific literature. Communication of research proposals and results. May be repeated for credit.

Prerequisites: Graduate classification.

Credit 1 to 3.

1 to 3 other hours

Learning Outcomes:

At the conclusion of BAE 600 Research, the student will be able to:

1. Develop a research inquiry and discussion of applicable experimental design, theoretical techniques and methodological principles of conducting original research;
2. evaluation of current research of faculty and students and in engineering and scientific literature.
3. Communication of research proposals and results.



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee)

(Date)

Jyotica Batra

CHAIRPERSON

APPROVED:

(Chairperson's Signature)

04/30/2024

(Date)

Chi Shen

DEAN APPROVED

(Dean's signature)

05/02/2024

(Date)

GRADUATE COUNCIL

APPROVED

(Director of Graduate Studies Signature)

(Date)

1. NEW COURSE NUMBER: BAE 601
2. NEW COURSE TITLE: Thesis
3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG **BAE 601 Thesis:**
Credits 3. 3 Other Hours. Research for thesis or dissertation.
4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 601 Thesis:** Credits 3. 3 Other Hours. Research for thesis or dissertation.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 2

5. PREREQUISITES: Graduate classification

6. REQUIRED COURSE: ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? ___ Yes ___ **No**

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 601 level required course for the MS degree program in Biological and Agriculture Engineering.

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 601
Course Title: Thesis (3)
Syllabus

Professor: TBD

Office: TBD

Office Phone: TBD

Email: TBD

Semester: TBD

Class Time: TBD

Classroom: TBD

Office Hours: TBD

University Catalogue Description:

BAE 601 Thesis: Credits 3. 3 Other Hours. Research for thesis or dissertation.

Learning Outcomes:

At the conclusion of BAE 600 Research, the student will be able to:

1. Communication of research proposals and results in a document
2. Presentation of research study and results



**CURRICULUM COMMITTEE
GRADUATE NEW COURSE PROPOSAL**

ACADEMIC UNIT: School of Engineering and Technology_____

DATE PREPARED: 04/30/2024_____

PRIMARY AUTHOR(S): Jyotica Batra_____

ACADEMIC PROGRAM

FACULTY APPROVED:

(Signature of Program Coordinator or Chair of Program Curriculum Committee) _____ (Date) _____

CHAIRPERSON

APPROVED:

(Chairperson's Signature) _____ (Date) _____

Jyotica Batra

04/30/2024

DEAN APPROVED

(Dean's signature)

Chi Shen

05/02/2024

(Date)

GRADUATE COUNCI

APPROVED

(Director of Graduate Studies Signature) _____ (Date) _____

1. NEW COURSE NUMBER: BAE 699
2. NEW COURSE TITLE: Directed Studies/Capstone
3. CAPSULE STATEMENT OF COURSE CONTENT FOR CATALOG **BAE 699**
Directed Studies/ Capstone: Advanced laboratory or field problems not related to student's thesis. Prerequisite: Graduate classification. Credits 3. 3 Other Hours.



CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

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4. DESCRIPTION OF COURSE CONTENT FOR COURSE SYLLABUS **BAE 699**
Directed Studies/ Capstone: Advanced laboratory or field problems not related to student's thesis. Prerequisite: Graduate classification. Credits 3. 3 Other Hours.

5. PREREQUISITES: Graduate classification

6. REQUIRED COURSE: ___ **Yes** ___ No

7. CREDITS: (a) Number ___ 3 ___

(b) Variable credit Explanation: NA

(c) Will course be repeatable for credit: ___ Yes ___ **No**

(d) Grading systems permitted: ___ **A-F** ___ P/F ___ Credit/No Credit

Exceptions: _____

8. Course Level: ___ Elementary
___ Intermediate
___ Intermediate/Advanced
× ___ Advanced

9. Delivery Method: ___ Online
___ Hybrid (Part online and part in person on a regular basis)
___ × ___ Traditional in Person

10. CROSSLISTING DEPARTMENTS (attach supporting letters):

11. SCHEDULING PLAN: ___ Each semester
× ___ Annually
___ Biennially
___ Occasionally

12. STARTING WITH:

___ Fall, ___ Spring, ___ 2025 ___ Summer: ___ Academic Year

13. IS THIS A "SPECIAL TOPICS" COURSE? ___ Yes ___ **No**

CURRICULUM CHANGE PROPOSAL

ACADEMIC UNIT: _____

COURSE NUMBER: _____

PAGE 3

14. EXPLANATION OF NEED FOR THE SPECIFIC COURSE: New BAE 699 level required course for the MS degree program in Biological and Agriculture Engineering.

15. RELATIONSHIP TO OTHER LIKE COURSES IN THE DISCIPLINE/UNIVERSITY:

NA

16. COURSE WHICH MAY BE DROPPED AS A RESULT OF THIS PROPOSAL:

NA

17. INSTRUCTIONAL STAFF (if non-faculty, attach Vita):

18. COURSE ASSESSMENT PLAN

Please include your plans for assessing how the course meets student learning outcomes and program objectives using the following table:

Course Objective	Student Learning Outcome	Criteria For Success
These will be finalized by the new faculty to be hired to support this program.		

19. COURSE SYLLABUS AND TEXT REFERENCE:

Kentucky State University
College of Business, Engineering and Technology
School of Engineering & Technology
Course: BAE 699
Course Title: Directed Studies/ Capstone (3)
Syllabus

Professor: TBD

Semester: TBD

Office: TBD

Class Time: TBD

Office Phone: TBD

Classroom: TBD

Email: TBD

Office Hours: TBD

University Catalogue Description:

BAE 699 Directed Studies/ Capstone: Advanced laboratory or field problems not related to student's thesis. Prerequisite: Graduate classification. Credits 3. 3 Other Hours.

Learning Outcomes:

At the conclusion of BAE 699 Directed Studies/Capstone, the student will be able to:

1. Advanced laboratory or field problems not related to student's thesis.
2. Communication of hypothesis/research theory
3. Documenting data and analyses