

A MEMORANDUM

DATE: February 11, 2025

TO: Academic Deans Council

FROM: Dr. Andy Perkins
UCCC Chair

RE: Change Notice 6

Listed below are curriculum change proposals which have been recommended by the University Committee Courses and Curricula. Under current procedure, members of the Academic Deans Council may question the approval of these proposals at any time prior to 5:00 p.m. on February 24, 2025 by contacting Dr. Andy Perkins (5-0004) or the office of the Vice President for Academic Affairs (5-3742). If no questions have been raised, the proposals will be considered approved automatically.

1. Course Proposals by college/school

AGRICULTURE AND LIFE SCIENCES

Addition AEC 4743/6743	Approved	AEC 4743/6743 Rural Economic Development (Prerequisite: AEC 2713: Introduction to Food and Resource Economics). Three hours lecture. This course will provide an overview of the economic and social conditions of rural areas. Focus will be on the United States, with an emphasis on rural regions in Mississippi. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 010103 30 Char: Rural Economic Development Effective: Fall 2025
Addition +Distance AEC 8353	Approved	AEC 8353 Agribusiness Accounting Three hours lecture. This graduate-level course provides an overview of accounting principles and applications of accounting information in agribusiness financial reporting and decision-making. This course is designed for graduate students who will likely use accounting information in future roles as agribusiness entrepreneurs, managers, business owners, or investors. Method of Instruction: C Method of Delivery: O Campus: 1 & 5 CIP: 010102 30 Char: Agribusiness Accounting Effective: Fall 2025
Addition +Distance AEC 8993	Approved	AEC 8993 Strategic Agribusiness Marketing Three hours. This course introduces essential and comprehensive tactics for refining brand messaging, leveraging digital assets, and effectively formulating strategic marketing plans. Students will learn how to strategically apply effective marketing tactics, content creation, lead generation, email marketing, and social media marketing. Method of Instruction: C Method of Delivery: F & O Campus: 1 & 5 CIP: 010102 30 Char: Strategic Ag. Mkt. Effective: Summer 2025

ARCHITECTURE ART AND DESIGN

Addition ARC 6113	Approved	ARC 6113 Architecture Colloquium (Prerequisite: graduate standing or consent of instructor). Three hours lecture. A review of contemporary major themes in the discipline of design throughout the world. Topical focus
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		to be determined by the faculty member conducting the course. Method of Instruction: S Method of Delivery: F Campus: 1 CIP: 040201 30 Char: Architecture Colloquium Effective: Fall 2025
Addition	ART 2753	Approved ART 2753 Animation (Prerequisite: ART 1153 or consent of instructor). Six hours studio. Introduction to the basic methods and practices of movement with traditional and digital techniques from hand-drawn to stop-motion. Demonstrate creating frame-by-frame sequences in various forms. Method of Instruction: Q Method of Delivery: F Campus: 1 CIP: 100304 30 Char: Animation Effective: Fall 2025
Addition	BCS 1133	Approved BCS 1133 Construction Drafting (Prerequisites: MA 1323 or ACT Math sub-score 26). Three hours lecture. Introduction to graphic communication and construction drawing and modeling. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 151303 30 Char: Construction Drafting Effective: Fall 2025
Addition	BCS 1143	Approved BCS 1143 Introduction to the Built Environment (No pre-requisite) 3 hours Three hours lecture. This course is an introduction to construction materials and methods, construction drawing, building systems, and professional thinking. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 522001 30 Char: Intro to Built Env Effective: Fall 2025
Addition	BCS 1243	Approved BCS 1243 Construction Site Safety (Prerequisites: BCS-1133). Three hours lecture. This course will present and discuss fundamental topics related to construction safety including construction site safety plans. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 522001 30 Char: Construction Site Safety

			Effective: Fall 2025
Addition	BCS 2123	Approved	BCS 2123 Construction Materials and Methods (Prerequisite: BCS-1133 Construction Drafting) Three hours lecture. Introduction to construction materials and methods. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 522001 30 Char: Con Materials & Methods Effective: Fall 2025
Addition	BCS 2223	Approved	BCS 2223 Construction Quality and Codes (Prerequisites: BCS-2123 Construction Materials and Methods) Three hours lecture. This course presents knowledge on controlling of construction projects to ensure compliance with building codes, drawings and specifications. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 522001 30 Char: Construction Quality and Codes Effective: Fall 2025
Addition	BCS 2233	Approved	BCS 2233 Construction Science Technology (Pre-requisite: BCS-2123) Three hours lecture. Use of a collection of innovative tools and software to improve the construction process throughout the project's lifespan. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 522001 30 Char: Con Science Tech Effective: Fall 2025
Addition	BCS 3133	Approved	BCS 3133 Construction Estimating (Prerequisite: BCS-2123) Three hours lecture. Introduction to quantity take-offs, pricing, estimating, and cost management in the construction discipline. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 522001 30 Char: Construction Estimating Effective: Fall 2025
Addition	BCS 3223	Approved	BCS 3223 Construction Finance (Pre-requisite: ACC-2023) Three-hour lecture. An in-depth exploration of construction financial management, introducing methods for managing a company's financial resources and developing its accounting system. Method of Instruction: C Method of Delivery: F

			Campus: 1 CIP: 522001 30 Char: Construction Finance Effective: Fall 2025
Addition	BCS 3233	Approved	BCS 3233 Construction Scheduling (Prerequisite: BCS-3133 Construction Estimating) Three hours lecture. In-depth study of project time management, construction management, plant and equipment management, logistics and operations management, and scheduling tools and methods. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 522001 30 Char: Construction Scheduling Effective: Fall 2025
Addition	BCS 4133	Approved	BCS 4133 Construction Contracts (Prerequisite: BCS-2123 Construction Materials) Three hours lecture. In-depth study of construction contracts and its components, construction management, and various project management knowledge areas. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 522001 30 Char: Construction Contracts Effective: Fall 2025
Addition	BCS 4233	Approved	BCS 4233 Construction Project Management (Prerequisite: BCS-3233 Cons Scheduling) Three hours lecture. In-depth study of project management and its components, construction management, and various project management knowledge areas. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 522001 30 Char: Cons Project Mgmt Effective: Fall 2025
Addition +Distance	BCS 6113	Approved	BCS 6113 Construction Risk Management and Decision-Making (Pre-requisites: BCS 3133, BCS 3233, and BCS 4233) Three hours lecture. Examine risk identification, analysis, and mitigation in construction projects, emphasizing decision-making strategies to manage uncertainties and improve project outcomes. Method of Instruction: C Method of Delivery: F & O Campus: 1 & 5 CIP: 151001 30 Char: Construction Risk Management Effective: Fall 2025

Addition +Distance	BCS 6213	Approved	BCS 6213 Sustainable Construction (Pre-requisites: BCS 3133, BCS 3233, and BCS 4233) Three hours lecture. A comprehensive review of sustainable construction practices, focusing on environmentally friendly materials, energy-efficient designs, and strategies to minimize environmental impact throughout the construction lifecycle. Method of Instruction: C Method of Delivery: F & O Campus: 1 & 5 CIP: 151001 30 Char: Sustainable Construction Effective: Fall 2025
Addition +Distance	BCS 6223	Approved	BCS 6223 Construction Financial Management (Pre-requisites: BCS 3133, BCS 3233, and BCS 4233) Three hours lecture. A comprehensive review of financial principles in construction, covering budgeting, cost control, financial analysis, and cash flow management to ensure the financial success of construction projects. Method of Instruction: C Method of Delivery: F & O Campus: 1 & 5 CIP: 151001 30 Char: Construction Financial Mgmt Effective: Fall 2025
Addition +Distance	BCS 6233	Approved	BCS 6233 Construction Heavy Equipment and Methods (Pre-requisites: BCS 3133, BCS 3233, and BCS 4233) Three hours lecture. A comprehensive review on the selection, operation, and management of heavy equipment in construction, focusing on methods that enhance efficiency, safety, and project success. Method of Instruction: C Method of Delivery: F & O Campus: 1 & 5 CIP: 151001 30 Char: Construction Heavy Equipment Effective: Fall 2025
Addition +Distance	BCS 6313	Approved	BCS 6313 Construction Data Analytics (Pre-requisites: BCS 3133, BCS 3233, and BCS 4233) Three hours lecture. Introduction to data analytics in construction, focusing on data collection, analysis, and interpretation to enhance decision-making, project efficiency, and performance evaluation. Method of Instruction: C Method of Delivery: F & O Campus: 1 & 5 CIP: 151001 30 Char: Construction Data Analytics Effective: Fall 2025
Addition +Distance	BCS 6323	Approved	BCS 6323 Current Topics in Construction (Pre-requisites: BCS 3133, BCS 3233, and BCS 4233) Three

		hours lecture. A comprehensive review of emerging issues and innovations in construction management, offering insights into contemporary challenges and advanced topics relevant to industry trends and practices. Method of Instruction: C Method of Delivery: F & O Campus: 1 & 5 CIP: 151001 30 Char: Current Topics in Construction Effective: Fall 2025
Addition +Distance BCS 8113	Approved	BCS 8113 Leadership and Human Factors in Construction (Pre-requisites: BCS 3133, BCS 3233, and BCS 4233) Three hours lecture. Explore leadership skills and human factors affecting construction projects, emphasizing team collaboration, effective communication, and strategies to enhance project outcomes. Method of Instruction: C Method of Delivery: F & O Campus: 1 & 5 CIP: 151001 30 Char: Leadership in Construction Effective: Fall 2025
Addition +Distance BCS 8123	Approved	BCS 8123 Research Methodology in Construction (Pre-requisites: BCS 3133, BCS 3233, and BCS 4233) Three hours lecture. Introduction to research methods in construction management, focusing on data collection, analysis, and interpretation to support evidence-based decision-making in construction projects. Method of Instruction: C Method of Delivery: F & O Campus: 1 & 5 CIP: 151001 30 Char: Research Methodology in Const. Effective: Fall 2025
Addition +Distance BCS 8133	Approved	BCS 8133 Emerging Technologies in Construction (Pre-requisites: BCS 3133, BCS 3233, and BCS 4233) Three hours lecture. Introduction to emerging technologies in construction processes, focusing on innovation, implementation, and benefits in enhancing project efficiency and sustainability. Method of Instruction: C Method of Delivery: F & O Campus: 1 & 5 CIP: 151001 30 Char: Emerging Tech in Construction Effective: Fall 2025
Addition +Distance BCS 8143	Approved	BCS 8143 Advanced Project Management and Control (Pre-requisites: BCS 3133, BCS 3233, and BCS 4233) Three hours lecture. Application of

		advanced techniques for managing and controlling construction projects, focusing on planning, execution, and performance measurement to ensure project success. Method of Instruction: C Method of Delivery: F & O Campus: 1 & 5 CIP: 151001 30 Char: Adv Project Management Control Effective: Fall 2025
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ARTS AND SCIENCES

Deletion	EN 4493/6493	Approved	EN 4493/6493 TESOL Practicum Effective: Summer 2025
Deletion	EN 4643/6643	Approved	EN 4643/6643 The Eighteenth-Century British Novel Effective: Fall 2025
Deletion	EN 4723/6723	Approved	EN 4723/6723 British Literature and Culture from 1600-1700 Effective: Fall 2025
Modification	GG 8123	Approved	FROM: GG 8123 Geology II: Earth, Time and Life (Prerequisite: GG 6103). Three hours lecture, video and online. Principles of historical geology with emphasis on geological time, earth history, fossils, evolution, and extinction. Primarily for K-12 science teachers. TO: GG 8123 Earth History, Paleo-Life, & Paleoclimate (Prerequisite: GG 1113, GG 6103, or GG 8103). Three hours lecture. Investigation into geologic time, Earth history, evolution, extinction, fossils, and paleoclimates. Method of Instruction: C Method of Delivery: F & O 30 Char: Earth History Effective: Fall 2025

BUSINESS

Addition	ENTR 3313	Approved	ENTR 3313 Innovation & Creativity (Prerequisites: junior standing). Three hours lecture. Uses contemporary approaches to the creative process to explore the development of creative thinking, venture exploration, and the development of entrepreneurial skills. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 520701 30 Char: Innovation & Creativity Effective: Fall 2025
Modification	ENTR 3333	Approved	FROM: MGT 3333 Field Studies in Entrepreneurship

		TO: ENTR 3333 Experiential Innovation & Entrepreneurship (Prerequisite: MGT 3323 or consent of instructor). Three hours lecture. Students, working in groups (or individually) under the direction of their professor, will assess problems of an embryonic, entrepreneurial organization and recommend appropriate solutions, through the development of an entrepreneurial organization or consulting with an operating entrepreneurial organization. Method of Delivery: F 30 Char: Experiential Innov & Entrep Effective: Fall 2025
Modification	ENTR 3713	Approved FROM: MGT 3713 Family Business Management TO: ENTR 3713 Family Business Management Three hours lecture. Study of business practices for family owned businesses - the functions, issues, operations, and dynamics of family businesses from a strategic management perspective. Effective: Fall 2025
Addition	ENTR 4333	Approved ENTR 4333 Business Venture Creation (Prerequisite: senior standing). Three hours lecture. Explores advanced topics in new venture growth. Focuses on innovation and growth using functional areas of the new venture to optimize revenue and maximize value creation. Method of Instruction: C Method of Delivery: F Campus: 1 CIP: 520701 30 Char: Business Venture Creation Effective: Fall 2025

EDUCATION

Addition +Meridian +Distance	EDE 3423	Approved EDE 3423 Early Childhood Mathematics Methods (Prerequisites: MA 1413 or MA 1213). Three hours lecture. Field based. The content and processes of mathematics instruction at the early childhood level through grade 3; teaching principles, mathematical tools, and assessment of student progress. Method of Instruction: C Method of Delivery: F & O Campus: 2 & 5 CIP: 131210 30 Char: Early Childhood Math Methods Effective: Fall 2025
Addition +Meridian +Distance	EDE 4303	Approved EDE 4303 Instruction Design and Assessment in Early Childhood Three hours lecture. This course empowers educators with a holistic understanding and the practical skills necessary for creating engaging and effective learning experiences tailored to the unique

		needs of young children, including those with disabilities and from diverse cultural backgrounds. Method of Instruction: C Method of Delivery: F & O Campus: 2 & 5 CIP: 131210 30 Char: Instr Des & Assess Early Child Effective: Fall 2025
Addition +Meridian +Distance	EDE 4323	Approved EDE 4323 Technology in the Early Childhood Classroom Three hours lecture. This course equips future educators with the tools and skills necessary to teach effectively in early childhood classrooms using technology. The course focuses on utilizing 21st century technology to create rich learning experiences for students in Pre-K through 3rd grade. Method of Instruction: C Method of Delivery: F & O Campus: 2 & 5 CIP: 131210 30 Char: Tech Early Child Classroom Effective: Fall 2025
Addition +Meridian +Distance	EDE 4989	Approved EDE 4989 Teaching Internship for Prekindergarten and Early Grades (Prerequisites: RDG 3113, RDG 3123, EDE 3423, EDE 4303/HDFS 4303, EDE 4323/HDFS 4323, EDE 4513, EDE 4523). Nine hours field-based internship. Professional full-day public school teaching experience in a prekindergarten or early grades classroom under the direction of a classroom mentor teacher and university supervisor. Method of Instruction: F Method of Delivery: F & O Campus: 2 & 5 CIP: 131210 30 Char: Teaching Internship for PreK-3 Effective: Fall 2025
Technical Change	EPY 4513/6513	Approved FROM: EPY 4513/6513 Introduction to Research in Educational Psychology Three hours lecture. (Prerequisites: EPY 4214 and 3503). An introduction to conducting educational research focusing on planning and designing research for applied education settings. TO: EPY 4513/6513 Introduction to Research in Educational Psychology Three hours lecture. (Prerequisites: EPY 3513 and 4214). An introduction to conducting educational research focusing on planning and designing research for applied education settings. Effective: Fall 2025
Modification +Distance	HED 8143	Approved HED 8143 U/Cc Seminar Three hours lecture. An in-depth analysis of current problems, strengths and issues confronting community college and university administrators and faculty. Distance: Yes

		Method of Delivery: F & O Campus: 1, 2, & 5 Effective: Fall 2025
Modification +Distance	HED 8543	Approved HED 8543 Legal Issues in Student Affairs Three hours lecture. Legal and ethical issues related to the student experience and the field of Student Affairs in American higher education. Distance: Yes Method of Delivery: F & O Campus: 1 & 5 Effective: Fall 2025
Modification +Distance	HED 8553	Approved HED 8553 Student Affairs in Higher Education Three hours lecture. Overview of the student affairs profession in higher education. Emphasis on history, philosophical foundations, organization, and the role of functional areas within student affairs divisions. Distance: Yes Method of Delivery: F & O Campus: 1 & 5 Effective: Fall 2025
Modification +Distance	HED 8563	Approved HED 8563 Assessment Strategy in Student Affairs & Higher Education Three hours lecture. Introduces the methods and tools used in Student Affairs and higher education to design program assessment plans and strategies; provides opportunities to implement the use of these tools in specific Student Affairs settings. Distance: Yes Method of Delivery: F & O Campus: 1 & 5 Effective: Fall 2025
Modification +Distance	HED 8573	Approved HED 8573 Applied Assessment in Student Affairs & Higher Education (Prerequisite: HED 8563 or approval of instructor). Three hours lecture. Advanced methods for assessment in Student Affairs and Higher Education with a particular focus on basic statistical principles and implementing data collection, analysis, and reporting procedures. Distance: Yes Method of Delivery: F & O Campus: 1 & 5 Effective: Fall 2025
Modification +Distance	HED 8593	Approved FROM: HED 8593 Administrative Competency in Stu Affairs & Higher Ed: Technology, Communication, & Crisis Three hour lecture. Examines the theory and application of technology, communication, and crisis response practices in Student Affairs and Higher Education settings, with a particular focus on college students and college student environments. TO: HED 8593 Administrative Competency in Stu Affairs & Higher Ed: Technology, Communication,

		& Crisis Three hours lecture. Examines the theory and application of technology, communication, and crisis response practices in Student Affairs and Higher Education settings, with a particular focus on college students and college student environments. Distance: Yes Method of Delivery: F & O Campus: 1 & 5 Effective: Fall 2025
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ENGINEERING

Modification GE 3513	Approved	FROM: GE 3513 Technical Writing (Prerequisite: Completion of English Composition requirements; junior standing). Three hours lecture. Instruction and practice in technical writing for scientific and engineering fields, emphasizing analysis and development of correspondence, progress and research reports, instruction, and proposals. TO: GE 3513 Professional Communication for Engineers (Prerequisite: Completion of English Composition requirements; junior standing). Three hours lecture. Instruction and practice in professional communication for scientific and engineering fields emphasizing analysis of audience and purpose to convey technical information clearly and concisely. Assignments include presentations, proposals, job application materials, instructions, and research reports on engineering 30 Char: Prof Comm for Engineers Effective: Fall 2025
Modification +Distance ME 3113	Approved	ME 3113 Engineering Analysis (Prerequisites: Grade of C or better in MA 3113, MA 3253, PH 2213, and CSE 1233 or equivalent course). Three hours lecture. Analysis of engineering problems requiring the use of engineering fundamentals and mathematical techniques of analysis with computer applications. Distance: Yes Method of Delivery: F & O Campus: 1, 2, 5, & 6 Effective: Fall 2025

2. Program Proposals by college/school:

ARTS AND SCIENCES

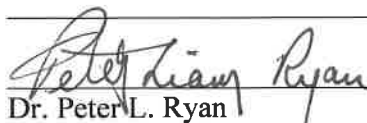
Modification	Degree: MS Major: Geosciences	Approved	See proposal for changes Effective Fall 2025
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ENGINEERING

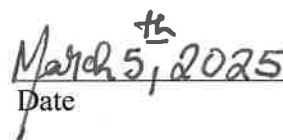
Modification	Degree: MS Major: Engineering	Approved	See proposal for changes Effective Fall 2025
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All of the proposals were approved with the exception of the following:

Proposals**



Dr. Peter L. Ryan
Executive Vice Provost for Academic Affairs


Date

APPROVAL FORM FOR
DEGREE PROGRAMS
MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the degree program change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted to UCCC Mail Stop 9702 (281 Garner Hall), Phone: 325-9410.

College Arts & Sciences Department: Geosciences
Contact Person: John Rodgers Mail Stop: 9537 E-mail: jcr100@msstate.edu
Nature of Change: Modification Date Initiated: August 5, 2024

Current Degree (BS, MS, etc.): MS Geosciences

Current Major: _____

Current Concentration(s): Environmental Geosciences

Current Campus(es): ☐ Starkville ☐ Meridian ☒ Distance ☐ Gulf Coast*

*Gulf Coast campus for Bagley College of Engineering only

New Degree (BS, MS, etc.): _____

Effective Date:

Semester	Year
<u>Spring**</u>	<u>2025</u>

**Any new program or modification desiring a starting semester other than fall must include a justification

Proposed Major: _____

Proposed Campus(es)

Proposed Concentration(s): _____

☐ Starkville
☐ Meridian
☒ Distance
☐ Gulf Coast*

*Gulf Coast campus for Bagley College of Engineering only

Summary of Proposed Changes:

We offer four organizational changes to reverse the decline in enrollment in ENGS. (1) allow for specified post-baccalaureate certificates to be ingested as a "stackable" degree, providing flexible entry and exit points; (2) a new concentration core comprised of existing courses to provide more structure; (3) making field courses optional instead of mandatory; and (4) replacing Research Methods with a Capstone Course.

Approved:

**John Rodgers,
Professor and Head**

Digitally signed by John
Rodgers, Professor and Head
Date: 2024.09.26 17:17:15
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Department Head


Director of Academic Quality


Chair, College or School Curriculum Committee


Dean of College or School

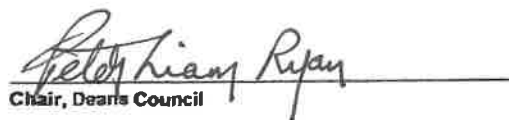

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D. Perkins
Date: 2025.02.10
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Chair, University Committee on Courses and Curricula

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Carr
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Russell Carr

Chair, Graduate Council (if applicable)


Chair, Deans Council

Date:

09/26/2024

10/21/2024

10/22/2024

10/22/2024

2/10/2025

March 5th, 2025

MASTERS OF SCIENCE DEGREE IN GEOSCIENCES, MODIFICATION OF ENGS CONCENTRATION

CATALOG DESCRIPTION AND CURRICULUM OUTLINE

Degree Modification Outline Form

CURRENT Program Overview	PROPOSED Program Overview
Admission The Department of Geosciences offers graduate study leading to the Master of Science degree in Geoscience and the Doctor of Philosophy degree in Earth and Atmospheric Science. An applicant to the program must have an undergraduate GPA of at least 2.75 on a scale of 4.00 for entry to the master's program and at least 3.00 at both the undergraduate and graduate level for entry to the doctoral program. Although helpful, an undergraduate background in Geosciences is not a prerequisite for admission into the M.S. in Geoscience program. All master's applicants are recommended to have completed Calculus I. Additional course prerequisites may be required depending on the student's emphasis area of interest. For admission to the Applied Meteorology program (AMP), applicants must hold a B.S. degree in a science and have completed GR 4733 or its equivalent. Specific classes in the AMP may require further prerequisites. Applicants to the doctoral program are required to have completed a thesis-based master's degree and have a background in one of the departmental emphasis areas. All applicants for the Doctoral program must identify a mentor (dissertation supervisor) prior to acceptance into the program. Applicants who have not completed a thesis or are from other science disciplines will be considered on a case-by-case basis through a petition, initiated by the identified mentor, to the department's graduate faculty. The doctoral degree student should anticipate a four-year program of study. Depending on the applicant's emphasis area of interest, Calculus I and II may be required for admission. The application package must contain the application for admission; at least three letters of reference; official bachelor's degree transcript; official transcripts from all colleges attended after earning the bachelor's degree (both undergraduate and graduate work); and a statement of purpose. Applicants desiring assistantship funding consideration are strongly advised to submit the assistantship application no later than January 15. Provisional Admission	Admission The Department of Geosciences offers graduate study leading to the Master of Science degree in Geoscience and the Doctor of Philosophy degree in Earth and Atmospheric Science. An applicant to the program must have an undergraduate GPA of at least 2.75 on a scale of 4.00 for entry to the master's program and at least 3.00 at both the undergraduate and graduate level for entry to the doctoral program. Although helpful, an undergraduate background in Geosciences is not a prerequisite for admission into the M.S. in Geoscience program. All master's applicants are recommended to have completed Calculus I. Additional course prerequisites may be required depending on the student's emphasis area of interest. For admission to the Applied Meteorology program (AMP), applicants must hold a B.S. degree in a science and have completed GR 4733 or its equivalent. Specific classes in the AMP may require further prerequisites. Applicants to the doctoral program are required to have completed a thesis-based master's degree and have a background in one of the departmental emphasis areas. All applicants for the Doctoral program must identify a mentor (dissertation supervisor) prior to acceptance into the program. Applicants who have not completed a thesis or are from other science disciplines will be considered on a case-by-case basis through a petition, initiated by the identified mentor, to the department's graduate faculty. The doctoral degree student should anticipate a four-year program of study. Depending on the applicant's emphasis area of interest, Calculus I and II may be required for admission. The application package must contain the application for admission; at least three letters of reference; official bachelor's degree transcript; official transcripts from all colleges attended after earning the bachelor's degree (both undergraduate and graduate work); and a statement of purpose. Applicants desiring assistantship funding consideration are strongly advised to submit the assistantship application no later than January 15. Provisional Admission

An applicant who has not fully met the GPA requirement stipulated by the University may be admitted on a provisional basis. The provisionally-admitted student is eligible for a change to regular status after receiving a 3.00 GPA on the first 9 hours of graduate courses at Mississippi State University (with no grade lower than a C). The first 9 hours of graduate courses must be within the student's program of study. Courses with an S grade, transfer credits, or credits earned while in Unclassified status cannot be used to satisfy this requirement. If a 3.00 is not attained, the provisional student shall be dismissed from the graduate program. Academic departments may set higher standards for students to fulfill provisional requirements; a student admitted with provisional status should contact the graduate coordinator for the program's specific requirements. While in the provisional status, a student is not eligible to hold a graduate assistantship. Academic Performance The Department of Geosciences follows the Graduate School guidelines regarding academic dismissal from an academic program. Additionally, a grade of U given for thesis or dissertation research hours, three grades of C, or a grade of D or F for any regular class will result in dismissal from the program. Process for Petitions In rare instances where exceptions are needed to the program guidelines set forth herein, the faculty mentor for the graduate student in question may petition the Department of Geosciences graduate faculty. The petition must be completed, in writing, and submitted to the graduate coordinator for dissemination to the full graduate faculty for review and vote. A majority vote will determine the outcome of the petition. Concentration Descriptions The thesis option is an on-campus thesis-based program that focuses in one of five possible emphasis areas within Geosciences, including Professional Meteorology, Professional Geology, Geospatial Science, Geography, or Environmental Geosciences. The non-thesis option is an on-campus non-thesis program that implements coursework in either a single emphasis area or across multiple emphasis areas within Geosciences. It is designed primarily for those with interests in Environmental Geosciences or Broadcast Meteorology, though a non-thesis degree can be developed for any emphasis area or across multiple emphasis areas. The Applied Meteorology Program is designed for individuals who are already in meteorological,	An applicant who has not fully met the GPA requirement stipulated by the University may be admitted on a provisional basis. The provisionally-admitted student is eligible for a change to regular status after receiving a 3.00 GPA on the first 9 hours of graduate courses at Mississippi State University (with no grade lower than a C). The first 9 hours of graduate courses must be within the student's program of study. Courses with an S grade, transfer credits, or credits earned while in Unclassified status cannot be used to satisfy this requirement. If a 3.00 is not attained, the provisional student shall be dismissed from the graduate program. Academic departments may set higher standards for students to fulfill provisional requirements; a student admitted with provisional status should contact the graduate coordinator for the program's specific requirements. While in the provisional status, a student is not eligible to hold a graduate assistantship. Academic Performance The Department of Geosciences follows the Graduate School guidelines regarding academic dismissal from an academic program. Additionally, a grade of U given for thesis or dissertation research hours, three grades of C, or a grade of D or F for any regular class will result in dismissal from the program. Process for Petitions In rare instances where exceptions are needed to the program guidelines set forth herein, the faculty mentor for the graduate student in question may petition the Department of Geosciences graduate faculty. The petition must be completed, in writing, and submitted to the graduate coordinator for dissemination to the full graduate faculty for review and vote. A majority vote will determine the outcome of the petition. Concentration Descriptions The thesis option is an on-campus thesis-based program that focuses in one of five possible emphasis areas within Geosciences, including Professional Meteorology, Professional Geology, Geospatial Science, Geography, or Environmental Geosciences. The non-thesis option is an on-campus non-thesis program that implements coursework in either a single emphasis area or across multiple emphasis areas within Geosciences. It is designed primarily for those with interests in Environmental Geosciences or Broadcast Meteorology, though a non-thesis degree can be developed for any emphasis area or across multiple emphasis areas. The Applied Meteorology Program is designed for individuals who are already in meteorological,
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climatological, and hazards-related careers. This non-thesis concentration is offered exclusively through distance education. The Environmental Geosciences concentration offers a broader cross-section of the geosciences and is designed for students with an interest in a wider range of sub-fields including: GIS, environmental science, oceanography, hydrology, and geology. The Environmental Geosciences concentration provides a broad geoscience background for careers in various government agencies, private consulting, education, etc. It is a non-thesis concentration offered exclusively through distance education.	climatological, and hazards-related careers. This non-thesis concentration is offered exclusively through distance education. The Environmental Geosciences concentration offers a broader cross-section of the geosciences and is designed for students with an interest in a wider range of sub-fields including: GIS, environmental science, oceanography, hydrology, and geology. The Environmental Geosciences concentration provides a broad geoscience background for careers in various government agencies, private consulting, education, etc. It is a non-thesis concentration offered exclusively through distance education.
CURRENT Degree Description	PROPOSED Degree Description
Degree: Master of Science Major: Geosciences	No change
Both a thesis track and a non-thesis track are available at the master's level for both on-campus and distance learning delivery methods. General Departmental Requirements All M.S. options require students to take a course in scientific methods. The on-campus thesis option also requires students to take an hour of seminar as part of their program of study. A student enrolled in the non-thesis option may petition the graduate faculty to complete a thesis. The department will not approve the request unless a faculty member has agreed to serve as major professor and a committee can be assembled. The department follows the Graduate School guidelines regarding the minimum number of course hours that must be at 8000-level or higher. Graduate committees must be comprised of 50% or greater graduate faculty from within the Department of Geosciences. Thesis option students are required to complete a thesis proposal defense, signed by their committee, as part of their program of study. The thesis proposal defense should not occur in the same semester as the thesis defense. Concentrations All on-campus programs fall under a general Geosciences major with thesis and non-thesis options. The department also offers the following concentrations through distance education: Applied Meteorology Program (AMP) Environmental Geosciences (ENGs) The AMP is designed for individuals who are already in meteorological, environmental, or hazards-related careers.	Both a thesis track and a non-thesis track are available at the master's level for both on-campus and distance learning delivery methods. General Departmental Requirements All M.S. options require students to take a course in scientific methods. The on-campus thesis option also requires students to take an hour of seminar as part of their program of study. A student enrolled in the non-thesis option may petition the graduate faculty to complete a thesis. The department will not approve the request unless a faculty member has agreed to serve as major professor and a committee can be assembled. The department follows the Graduate School guidelines regarding the minimum number of course hours that must be at 8000-level or higher. Graduate committees must be comprised of 50% or greater graduate faculty from within the Department of Geosciences. Thesis option students are required to complete a thesis proposal defense, signed by their committee, as part of their program of study. The thesis proposal defense should not occur in the same semester as the thesis defense. Concentrations All on-campus programs fall under a general Geosciences major with thesis and non-thesis options. The department also offers the following concentrations through distance education: Applied Meteorology Program (AMP) Environmental Geosciences (ENGs) The AMP is designed for individuals who are already in meteorological, environmental, or hazards-related careers.

Forecasting GR 8143 Advanced Forecasting Techniques Additional graduate-level coursework ² Total Hours ¹ Substitutions may be made with the approval of the major professor and committee with appropriate documentation. They must be noted on the program of study. Note: A split-level course completed at the undergraduate level cannot be repeated on the graduate level for use on the program of study. ² A research project presentation and a written and oral comprehensive examination are required.			
<i>Master of Science in Geosciences with Environmental Geosciences Concentration</i> <i>GR 8553 Research Methods in Geoscience</i> <i>GR 8410 Field Methods Seminar or</i> <i>GR 8423 Virtual Field Methods or</i> <i>GR 8503 Landforms</i> <i>Select at least 9 hours from the following: ¹</i> <i>GG 6033 Resources and the Environment</i> <i>GG 6063 Earth and Atmospheric Energy Resources</i> <i>GR 6303 Principles of GIS</i> <i>GR 6313 Advanced GIS</i> <i>GR 6333 Remote Sensing of the Physical Environment</i> <i>GR 6863 Forensic Geoscience</i> <i>GG 6503 Geomorphology</i> <i>GG 6523 Coastal Environments</i> <i>GR 6123 Urban Geography</i>	3 3 9	Master of Science in Geosciences with Environmental Geosciences Concentration <u>Core Courses (Required):</u> GR 8233 Environmental Geosciences GG 8613 Hydrology GR 8633 Climate Change GR 8583 Geoscience Capstone Choose one of the following • GR 6303 Principles of GIS • GR 6313 Advanced GIS • GR 6333 Remote Sensing Total Core <u>Geosciences Electives, 15 hours:</u> List of Geosciences Electives (consult your academic adviser): GG 6124 Petrology GG 6323 Karst Processes & Landforms GG 6523 Coastal Environments GG 6533 Geo. Study Abroad GG 6543 Comm. Eng. Learn. Geo. GG 8103 Geology and Geoheritage of National Parks GG 8123 Geology II: Earth, Time, and Life	3 3 3 3 3 15 15

GG 6323 Karst Processes and Landforms GG 6353 Geodatabase Design GR 6363 GIS Programming GG 6613 Physical Hydrogeology GR 6813 Natural Hazards and Processes GR 6603 Climatology GR 6613 Applied Climatology GG 8203 Ocean Science GG 8233 Environmental Geoscience GG 8613 Hydrology GR 8633 Climate Change GR 8813 Advanced Hazards and Disasters Additional graduate-level coursework: ² Total Hours: ¹ A student who has taken any of these 9 hours in an undergraduate Geosciences program, or who has taken other appropriate MSU graduate-level courses, may substitute these with the approval of the major professor and committee. They must be noted on the program of study. Note: A split-level course completed at the undergraduate level cannot be repeated on the graduate level for use on the program of study. ² A capstone research project (oral presentation and paper) and a written and oral comprehensive examination are required.	15 30	GG 8133 Rocks and Minerals GG 8203 Ocean Science GG 8313 History of Life GG 8343 Paleontology of Dinosaurs GG 8423 Earthquakes & Volcanoes GG 8503 Landforms GG 8733 Geology of North America GR 6133 Political Ecology GR 6203 Geography of North America GR 6313 Advanced GIS GR 6333 Remote Sensing of Physical Environment GR 6343 Advanced Remote Sensing GR 6353 Geodatabase Design GR 6363 GIS Programming GR 6603 Climatology GR 6613 Applied Climatology GR 6643 Physical Meteorology & Climatology 1 GR 6813 Natural Hazards GR 6863 Forensic Geosciences GR 8410 Field Methods in Geo. GR 8453 Quantitative Analysis GR 8833 Weather and Society GR 8813 Advanced Nat. Hazards GR 8613 Hydrometeorology <u>Total Hours:</u>	<u>30</u>
Master of Science in Geosciences (Thesis Option) GG 8571 Geosciences Seminar Select at least 3 hours from the following¹:	1 3-4	No change	

GR 8453 Quantitative Analysis in Climatology GG 6113 Micropaleontology GG 6414 Structural Geology GG 6633 Introduction to Geochemistry GG 8633 Water Biogeochemistry GG 8743 Basin Analysis GR 6363 GIS Programming GR 8563 GIS Research Applications GR 8553 Research Methods Additional graduate-level coursework ² GR 9000 ³ ¹ Substitutions may be made with the approval of the major professor and committee. They must be noted on the program of study. Note: A split-level course completed at the undergraduate level cannot be repeated on the graduate level for use on the program of study. ² Additional coursework should be established with consultation of major professor and committee in the emphasis area (or areas) for the thesis program. ³ A thesis defense/comprehensive exam is required. Master of Science in Geosciences (Non-Thesis Option) Select 3 hours from the following¹: GR 8453 Quantitative Analysis in Climatology GG 6113 Micropaleontology GG 6414 Structural	19-20 6 3-4 32-33		
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Geology GG 6633 Introduction to Geochemistry GG 8633 Water Biogeochemistry GG 8743 Basin Analysis GR 6363 GIS Programming GR 8563 GIS Research Applications GR 8553 Research Methods Additional graduate-level coursework ² ¹ Substitutions may be made with the approval of the major professor and committee. They must be noted on the program of study. Note: A split-level course completed at the undergraduate level cannot be repeated on the graduate level for use on the program of study. ² Additional coursework should be established with consultation of major professor and committee in the emphasis area (or areas) for the non-thesis program.			
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JUSTIFICATION AND STUDENT LEARNING OUTCOMES

Justification and Student Learning Outcomes – M.S. programs (on-campus)

No changes.

Justification and Student Learning Outcomes – M.S. program in Applied Meteorology (online program)

No changes.

Justification and Student Learning Outcomes – M.S. program in Environmental Geosciences

Justification

This proposed certificate does not require any additional resources, and therefore, we believe that we are in a good position to start offering the certificate with a January 2025 start date. The necessary faculty are already in place, and the courses are currently offered. The proposal merely provides a new organizational framework, demanding minimal time and effort.

The primary motivation to modify the Environmental Geosciences Master's degree program is the significant decline in enrollment numbers. In Fall 2021, there were 97 students; by Fall 2023, the number had dropped to 49, and in Fall 2024, there are only 41 students (only six of these are new students). We believe this decline is partly due to the current program structure, which requires the completion of all 30 credit hours. To address this, we propose transitioning to a stackable degree model. This model will allow students to earn a post-baccalaureate certificate after completing the first 15 credit hours, with the option to complete an additional 15 credit hours to earn the full MS degree. There are accompanying degree modification proposals to this proposal for creation of post-baccalaureate certificates in Geology and Climate Change. Plus, there is already a post-baccalaureate certificate in existence already called “Geospatial and Remote Sensing Technologies”. This approach provides faster credentialing, enabling students to enter the workforce or achieve promotions more quickly. It also encourages students hesitant to commit to a full master's program to start with the certificate, potentially leading to increased enrollment. Additionally, the flexibility to stop and start the program as needed may attract more applicants. The stackable degree model also continues to support students who prefer to complete the entire 30-hour program upfront by allowing them to choose from various geoscience elective courses. This flexibility ensures that students can tailor their education to their interests and career goals.

Another proposed change is to enhance the structure of required core courses, creating more uniformity in students' coursework. The original program required two core courses (GR 8553 and GR 8410), nine hours from a list of 21 courses, and 15 hours of departmental electives, which was too unstructured. The new plan will require five core courses (15 credit hours) for everyone, including Environmental Geosciences, Hydrology, Principles of GIS, Climate Change, and a Geosciences Capstone project. These five courses represent the foundation of an environmental geosciences degree. This consistency will facilitate tracking institutional effectiveness and foster camaraderie among student cohorts.

We also propose making the field methods course optional. A fieldwork requirement may introduce unnecessary barriers to program accessibility for students who are unable to spend extended periods in field settings for physical, economic, or psychological reasons. By allowing students to self-select into the field course, we accommodate those with financial, time, or personal constraints. This change ensures that students have alternative options if they are unable to undertake conventional fieldwork.

Additionally, we propose replacing GR 8553 Research Methods with GR 8583 Geosciences Capstone. Our graduates have diverse career aspirations, and not all are interested in general academic research methodologies. The capstone experience will allow students to synthesize their coursework into a project, enhancing their resumes and aiding in employment.

Lastly, we propose removing the statement “A capstone research project (oral presentation and paper).... Is required” and incorporating the capstone project into the GR 8583 Geosciences Capstone course. This integration ensures that students receive academic credit, faculty receive compensation, and group participation and presentations are encouraged.

Student Learning Outcomes: (accompanying this proposal is an outcome map that describes how the outcomes will be assessed for institutional effectiveness reporting.

Overarching Program Outcome: The Master of Science in Environmental Geosciences, offered as a non-thesis, distance learning program, aims to equip students with a comprehensive understanding of the Earth's environmental systems and the complex interactions within them. The program covers a broad spectrum of geoscience-related topics, including environmental history, which provides a contextual foundation for current environmental issues and discussions. It delves into the pressing matter of climate change, examining its causes, impacts, and mitigation strategies. The curriculum also encompasses hydrology, focusing on the distribution and movement of water on Earth, and geospatial methods, which enable students to analyze and interpret spatial data crucial for environmental research and decision-making. The program culminates in a comprehensive capstone project, allowing students to apply their acquired knowledge and skills to a real-world environmental problem, demonstrating their ability to synthesize information and propose viable solutions.

Student Learning Outcome 1: Comprehension of Earth’s Environmental Systems and Interactions Within Them: Graduates of the Master of Science in Environmental Geosciences program will demonstrate a comprehensive understanding of Earth's environmental systems, including the atmospheric, hydrospheric, lithospheric, and biospheric components. They will be able to analyze the complex interactions among these systems, evaluate the impacts of natural and anthropogenic changes, and apply this knowledge to develop sustainable solutions for environmental challenges. This outcome ensures that graduates can effectively integrate scientific principles and methodologies to address real-world environmental issues and contribute to informed decision-making and policy development.

Student Learning Outcome 2: Comprehension of Water Resources: Graduates of the Master of Science in Environmental Geosciences program will have a thorough understanding of hydrology, encompassing the fundamental principles of the water cycle, the distribution and movement of surface and groundwater, and the complex interactions between water and various environmental systems. They will be adept at analyzing hydrological data, utilizing geospatial and modeling tools to assess water resources, predict hydrological responses to environmental changes, and develop sustainable water management practices. Through this expertise, graduates will be prepared to address critical water-related challenges in both natural and urban environments, contributing to informed decision-making and effective environmental stewardship.

Student Learning Outcome 3: **Problem-Solving and Critical Thinking with Geospatial**

Analysis: Graduates will apply critical thinking skills to explaining and identifying geographic patterns and proposing informed solutions to challenges related to spatial analysis.

Student Learning Outcome 4: **Comprehension of Climate Change:** Graduates of the Master of Science in Environmental Geosciences program will possess a deep understanding of climate change, including the scientific principles underlying climate systems, the factors driving climate variability and long-term changes, and the socio-economic and environmental impacts of climate change. They will be skilled in analyzing climate data and assessing the effectiveness of mitigation and adaptation strategies. They will be familiar with climate models. Equipped with this knowledge, graduates will be capable of contributing to policy development, advocating for sustainable practices, and implementing solutions to mitigate the adverse effects of climate change on both local and global scales.

Student Learning Outcome 5: **Critical Thinking of Terrestrial, Coastal, and/or Marine systems.** Graduates of the Master of Science in Environmental Geosciences program will have a comprehensive understanding of land, coastal, and marine systems, including the physical, chemical, and biological processes that govern these environments. They will be proficient in analyzing the interactions between terrestrial and aquatic environments, assessing the impacts of human activities on these systems, and utilizing geospatial and remote sensing technologies to monitor and manage environmental changes.

Student Learning Outcome 6: **Application of Environmental Science:** Graduates of the Master of Science in Environmental Geosciences program will successfully complete a comprehensive capstone course, demonstrating their ability to integrate and apply interdisciplinary knowledge and skills acquired throughout the program to a real-world environmental problem. This outcome involves conducting research, utilizing advanced geospatial, hydrological, and climate analysis tools, and developing practical, evidence-based solutions. Graduates will exhibit project management, critical thinking, and communication skills, culminating in a professional presentation and detailed report that showcases their capability to address complex environmental challenges and contribute meaningfully to the field of environmental geosciences.

Programmatic Review Assessment

The modifications proposed here aim to bolster enrollment and prevent further decline. There are no changes in credit hours nor additions of new courses, although two courses are currently being approved for online instruction. Our proposal focuses on reshuffling existing courses and integrating post-baccalaureate certificates to provide greater flexibility and enhanced job opportunities for our students. By doing so, we intend to halt the enrollment decline and instead offer a more attractive program that will stimulate growth. These targeted changes address immediate needs without necessitating an expansive review of other programs.

Required Questions

1. Will this program change meet local, state, regional, and national educational and cultural needs? If so, please describe.

A Master of Science degree in Environmental Geosciences addresses educational and cultural needs at local, state, regional, and national levels by equipping graduates with the expertise to tackle pressing environmental challenges. Locally, graduates can contribute to sustainable community planning and natural resource management, fostering environmental stewardship and resilience. At the state level, they can engage in policy development and implementation, ensuring that environmental regulations protect ecosystems and public health. Regionally, the program prepares professionals to address issues like water scarcity, land use changes, and coastal erosion, promoting sustainable development across diverse landscapes. Nationally, graduates become valuable assets in addressing climate change, advancing renewable energy initiatives, and supporting national conservation efforts. Through interdisciplinary training and applied research, the program cultivates a workforce capable of leading environmental initiatives, promoting public awareness, and driving cultural shifts towards sustainability and environmental responsibility.

2. Will this program change result in duplication in the System? If so, please describe.

We are not aware of any duplication specifically related to “Environmental Geosciences” that will result from this program change. No other interdisciplinary Department of Geosciences comprised of our expertise areas exists within the state.

3. Will the program change/advance student diversity within the discipline? If so, please describe.

A Master of Science in Environmental Geosciences promotes diversity by fostering an inclusive educational environment that attracts students from various backgrounds, including underrepresented groups in the sciences. The program emphasizes the importance of diverse perspectives in understanding and addressing complex environmental issues, encouraging collaborative problem-solving and innovation. By integrating global environmental challenges into the curriculum, the program prepares graduates to work effectively in diverse cultural and geographic settings. Additionally, a focus on environmental justice ensures that students are aware of and committed to addressing the disproportionate impacts of environmental degradation on marginalized communities. Through community engage learning opportunities, the program actively supports the participation and success of diverse students, cultivating a new generation of environmental leaders who are equipped to create equitable and sustainable solutions.

4. Will the program change result in an increase in the potential placement of graduates in MS, the Southeast, and the U.S.? If so, please describe.

Converting an existing 30-credit-hour Master's degree in Environmental Geosciences into a stackable degree model, where students can earn a post-baccalaureate certificate after the first 15 credit hours and then complete an additional 15 credit hours to receive the full MS degree, significantly enhances the potential placement of graduates across various regions, including the Midwest, Southeast, and the broader U.S. This flexible approach allows students to gain recognized credentials more quickly, making them immediately marketable and able to enter the workforce with specialized skills sooner. The initial certificate can serve as a stepping stone for career advancement or transition, appealing to working professionals and those looking to upskill or pivot their careers. Additionally, the stackable model caters to diverse learning needs and schedules, making advanced education more accessible and affordable. By creating multiple entry and exit points, the program can attract a wider pool of students, including those who might be hesitant to commit to a full master's program upfront. Ultimately, this approach increases the overall number of qualified professionals in the field, addressing regional and national demand for expertise in environmental geosciences and enhancing the employability and career growth opportunities for graduates.

5. Will the program change result in an increase in the potential salary of graduates in MS, the Southeast, and the U.S? If so, please describe.

A stackable degree in Environmental Geosciences offers substantial benefits for increasing graduate salaries in the workforce. By allowing students to earn a post-baccalaureate certificate after the first 15 credit hours, they can quickly gain specialized skills and credentials that enhance their employability and earning potential. This early credential can lead to immediate job opportunities or promotions, providing a salary boost even before completing the full master's degree. As students continue their education and obtain the full MS degree, they further increase their qualifications and expertise, positioning themselves for higher-level roles and corresponding salary increases. The flexibility of the stackable model also supports continuous professional development, enabling graduates to adapt to evolving industry demands and pursue higher-paying positions as they accrue more knowledge and experience. This incremental approach to education ensures that graduates are consistently advancing their careers and increasing their income potential over time.

SUPPORT

A letter of support from the Department of Geosciences Curriculum Committee is attached to this proposal.

PROPOSED 4-LETTER ABBREVIATIONS (STARRED REMAIN UNCHANGED):

Master of Science in Geosciences (GEOS)*
 Applied Meteorology Concentration (AMP)*
 Environmental Geosciences Concentration (ENGs)*

EFFECTIVE DATE

Spring 2025

Explanation for January 2025 Start: This proposed certificate does not require any additional resources, and therefore, we believe that we are in a good position to start offering the certificate immediately. The necessary faculty are already in place, and the courses are currently offered. The proposal merely provides a new organizational framework, demanding minimal time and effort.

CIP NUMBER

40.0601



MISSISSIPPI STATE
UNIVERSITY

Department of Geosciences

108 Hilburn Hall
355 Lee Blvd.
P.O. Box 5448
Mississippi State, MS 39762
Phone (662) 325-3915
FAX (662) 325-9423

September 12, 2024

College of Arts and Sciences and the University Courses and Curriculum Committees

Mississippi State University

RE: Department of Geosciences – Modifications – ENGS MS DL Program

Dear Curriculum Committee,

The Department of Geosciences Curriculum Committee has reviewed and supports the proposed modifications to the distance learning Environmental Geosciences MS online curriculum. These modifications will update the ENGS curriculum information outlined below:

- allow for specified post-baccalaureate certificates to be ingested as a "stackable" degree, providing flexible entry and exit points
- new concentration core comprised of existing courses to provide more structure
- making field courses optional instead of mandatory
- replacing Research Methods with a Capstone Course

We fully support these modifications to the DL ENGS MS curriculum. If you have any questions or need additional information, please do not hesitate to contact us.

Respectfully,

Andrew Mercer

Digitally signed by Andrew
Mercer
Date: 2024.09.12 12:21:47 -05'00'

Andrew Mercer (Committee Member)

**Boniface O
Fosu**

Digitally signed by Boniface O
Fosu
Date: 2024.09.12 13:15:07
-05'00'

Boniface Fosu (Committee Member)

**Brian
Williams**

Digitally signed by
Brian Williams
Date: 2024.09.12
12:15:32 -05'00'

Brian Williams (Committee Member)

Varun Paul

Digitally signed by Varun
Paul
Date: 2024.09.12 14:37:57
-05'00'

Varun Paul (Committee Member)

Sarah Lalk, PhD

Digitally signed by Sarah Lalk,
PhD
Date: 2024.09.12 12:07:24 -05'00'

Sarah Lalk (Committee Chair)

Cc: Dr. John C. Rodgers, Department Head of Geosciences

Friday, October 11, 2024 at 17:06:52 Central Daylight Time

Subject: Degree Modification GEO Grad MS ENGS Campus 5
Date: Friday, October 11, 2024 at 2:34:41 PM Central Daylight Time
From: Rodgers, John
To: DeanAS-Curriculum
Attachments: ENGS Concentration Final Revised Degree Cover Sheet Accessible jr.pdf, ENGS degree table Modified to include Cains suggestion on formatting with Mercers previous changes already accounted for.docx, LoS_Geo_ENGS_MS_mods_SL_BW_aem_BF_VP[24].pdf

I am submitting a degree modification proposal to amend the Campus 5 graduate degree Environmental Geosciences (ENGs). We are changing the required courses with the hope of salvaging the degree, which has seen considerable decline in enrollment during the last few years.

Attached are the degree proposal, the coversheet, and the letter of support from the department. Please let me know if there is anything else that is required. Also, if the list of ENGs electives is too complex, I am amenable to just delete the list and simplify with "15 hrs Geo electives" and leave it at that.

Note that the Geo grad degree had a proposal to modify Campus 1 MS program that was submitted last year, 2023-2024. That proposal got hung-up at Grad Council until recently, but according to Dana Franz, the issues have been resolved and the proposal has passed. Dr. Franz's email is below. Therefore this submission does not overlap with the previous.

From: Franz, Dana <DFranz@oie.msstate.edu>
Date: Tuesday, October 8, 2024 at 9:48 AM
To: Rodgers, John <rodgers@geosci.msstate.edu>, Mercer, Andrew <mercer@ngi.msstate.edu>
Subject: RE: Confirmation of UCCC Grad MS changes last year

Hi John,

My understanding is that the change will appear on the next Change Notice that should be out today or tomorrow. I talked with Andy about this, and he agreed, go ahead and start the new degree modifications. No problem.

Dana

Sincerely,

John Rodgers, Professor and Head
Department of Geosciences
Mississippi State University
662-325-1393
jcr100@msstate.edu

APPROVAL FORM FOR

DEGREE PROGRAMS

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the degree program change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted to UCCC Mail Stop 9702 (281 Garner Hall), Phone: 325-9410.

College Bagley College of Engineering **Department:** Dean's Office

Contact Person: Adrian Sescu **Mail Stop:** 9544 **E-mail:** sescu@ae.msstate.edu

Nature of Change: Addition **Date Initiated:** Spring 2023

Current Degree Program Name: _____

Current Major: _____

Current Concentration(s): _____

Current Campus(es): Starkville

New Degree Program Name: Master of Science in Engineering **Effective Date:** 08/16/2025

Semester	Year
<u>Fall</u>	<u>2025</u>

Proposed Major: Engineering

Proposed Concentration(s): Biomedical, Biosystems, Computational Engineering, Engineering

Proposed Campus(es): Starkville

Summary of Proposed Changes:

This degree is being proposed to reach niche student markets that would not have sufficient enrollments to have their own MS degree. This degree will also allow students the ability to tailor their degree to meet their specific professional and career goals.

Approved:

Date:



Department Head

2/5/2024



Director of Academic Quality

T.J. Jankun-Kelly

Chair, College or School Curriculum Committee

2/5/2024

Digitally signed by T.J. Jankun-Kelly

Date: 2024.02.05 14:55:38 -06'00'

Kari Babski-Reeves for Jason Ketih

Digitally signed by Kari Babski-Reeves for Jason Ketih

Date: 2024.02.05 15:04:18 -06'00'

Dean of College or School



Chair, University Committee on Courses and Curricula

Russell Carr

Digitally signed by Russell
Carr
Date: 2025.02.10
10:17:51 -06'00'

Chair, Graduate Council (if applicable)

2/10/2025



Chair, Deans Council

March 5th, 2025

NEW GRADUATE DEGREE OUTLINE FORM

Use the chart below to indicate your new degree outline. Please list required College and Major Required Courses and if appropriate Concentration Courses. Graduate programs that wish to specialize beyond the Major must have at least two concentrations. Add additional rows as needed for programs with more than two concentrations. Expand rows as needed

PROPOSED New Degree	
Degree: Master of Science in Engineering Major: Engineering Concentration 1: Biomedical Engineering Concentration 2: Biosystems Engineering Concentration 3: Computational Engineering Concentration 4: Engineering	
The Master of Science in Engineering (MSEng) is a new master's program allowing students to "build their own" master's degree as well as focus on planned concentration areas. Unlike the Master of Engineering (MEng), the MSEng will require an undergraduate engineering degree for admission to the program. This program though will provide students with flexibility in tailoring programs of study to support their career development and aspirational goals. As jobs become more cross disciplinary, it is necessary to provide students with the opportunity to learn skills in various disciplines within and outside of engineering. This program will be offered both on the Starkville and online campus and will be a minimum of 30 credit hours.	
The Biomedical Engineering concentration is a thesis only, 30 credit hour interdisciplinary program administered through the Department of Agricultural and Biological Engineering. Programs of study and research leading to the Master of Science in Engineering with a concentration in Biomedical Engineering apply engineering principles to study and finds solutions for problems associated with the human body, medicine, and the health care field. At MSU, students can concentrate on research in biomaterials and biomechanics (e.g., injury biomechanics, vascular calcification, bone fracture healing, and cartilage regeneration) or sensors and devices (e.g., noninvasive and remote methods and devices for cardiovascular monitoring, and devices and methods for measuring and modeling neural signals).	
Proposed Curriculum Outline	Required Hours
College Required Courses:	0
n/a	
Major Required Courses:	0
n/a	
Concentration 1. Courses:	
ABE 8621 Methods of Biomedical Engineering Research	1
ABE 8801 Clinical Experience for Biomedical Engineering	1
One of the following:	4
BIO 6514 Animal Physiology	
BIO 6114 Cellular Physiology	
ST 8114 Statistical Methods	4
8000-level coursework	6
Additional graduate level coursework	8
ABE 9000 Research in Agricultural and Biological Engineering	6
Total Hours	30
The Biosystems Engineering concentration is a thesis only, 30 credit hour interdisciplinary program administered through the Department of Agricultural and Biological Engineering. Programs of study and research leading to the Master of Science in Engineering with a concentration in Biosystems Engineering will focus on addressing natural resources and environment (e.g., agricultural water resource management and modeling, confined animal environments, and bioenergy) or autonomous agricultural systems (e.g.,	

autonomous/robotic agricultural machinery, artificial intelligence in agriculture, agricultural sensors and remote sensing, and precision agriculture).	
Proposed Curriculum Outline	Required Hours
Concentration 2. Courses: ST 8114 Statistical Methods One of the following: ABE 8911 Agricultural and Biological Engineering Seminar I ABE 8921 Agricultural and Biological Engineering Seminar II 8000-level coursework Additional graduate level coursework ABE 9000 Research in Agricultural and Biological Engineering	4 1 6 13 6
Total Hours	30
The Computational Engineering concentration is a 30-hour thesis or 33-hour non-thesis program administered through the Bagley College of Engineering Dean's Office. Programs of study and research leading to the Master of Science in Engineering with a concentration in Computational Engineering will complete courses that provide engineers with a foundation to create tools for computational analysis and design, and with a strong domain knowledge for application of these tools to complex engineering problems. Such programs of study come with curricula covering a wide range of subjects, preparing the students to become scientists and engineers with broad backgrounds and viewpoints. These scientists and engineers are then expected to understand and apply these basic approaches to solving analytical problems and also using appropriate computational tools required to arrive at solutions.	
Proposed Curriculum Outline	Required Hours
Concentration 3. Courses: Thesis track: 8000-level coursework Additional graduate level coursework CME 9000 Non-thesis track: 8000-level coursework Additional graduate level coursework CME 7000 Directed Individual Study in Computational Engineering Because of the interdisciplinary nature of the computational Engineering program, the program of study must demonstrate the student has achieved a working knowledge of 1. a Computational Engineering application area 2. high-performance computing, and 3. numerical mathematics Various courses internal and external to engineering can be used to fulfill this requirement but must be approved by the CME graduate coordinator and the student's graduate committee.	12 12 6 15 15 3
Total Hours	30 or 33
The Engineering concentration is a 30-hour thesis/non-thesis program administered through the Bagley College of Engineering Dean's Office. Programs of study and research leading to the Master of Science in Engineering with a concentration in Engineering will be custom tailored for individualized student learning and will allow students to draw upon courses from across the college and university.	
Proposed Curriculum Outline	Required Hours

Concentration 4. Courses: 8000-level coursework Additional graduate level coursework Students must take at least 1 class from 3 different engineering disciplines and no more than 12 hours can be taken external to Bagley College of Engineering. GE 9000 Thesis/Dissertation	12 12 (thesis) / 18(non-thesis) 6 (thesis only)
Total Hours	30

NEW ACADEMIC DEGREE PROGRAM PROPOSAL

Institutional Request Form – Appendix 8

(Submit in PDF format with signatures.)

Institution: Mississippi State University

Date of anticipated implementation: August 2024

Program title as it will appear on Academic Program Inventory, Diploma, and Transcript: Engineering
Name of degree(s) to be awarded: Master of Science
Six-digit CIP code: 14.0101
Total credit-hour requirement to earn the degree: 30 to 33
Responsible academic unit: Dean's Office Bagley College of Engineering
Institutional contact: Kari Babski-Reeves
Phone: 662-325-7624
Email: klb4@msstate.edu

SACSCOC Substantive Change: ☒ Program proposed **IS NOT** a substantive change.
☐ Program proposed **IS** a substantive change.

Incremental, five-year cost of implementation: \$450,000
Incremental, five-year per student cost of implementation: \$6,896
Potential five-year, new revenue: \$1,160,775.00
Potential new, five-year revenue per student: \$11,055
Will it attract new students to the university? ☒ Yes
☐ No

List any institutions within the State offering similar programs: None

Number of students expected to enroll in first 5 years:	Number of students expected to graduate in first 5 years:
Year 1 5	Year 1 0
Year 2 8	Year 2 0
Year 3 10	Year 3 4
Year 4 15	Year 4 6
Year 5 20	Year 5 8
Total 58	Total 18

Program summary (include second majors completed, if applicable):

The Master of Science in Engineering (MSEng) is a new master's program allowing students to "build their own" master's degree as well as focus on planned concentration areas. Unlike the Master of Engineering (MEng), the MSEng will require an undergraduate engineering degree for admission to the program. This program though will provide students with flexibility in tailoring programs of study to support their career development and aspiration goals. As jobs become more cross disciplinary, it is necessary to provide students with the opportunity to learn skills in various disciplines within and outside of engineering. This program will be offered both on the Starkville and online campus.

The audit of recently approved academic programs ensures that the program outcomes are congruent with the Board-approved proposal.

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(Submit in PDF format with signatures.)

Please respond to the questions on the following pages to aid the institution and IHL staff in making recommendations to the IHL Board of Trustees.

Chief Academic Officer Signature – Date

Institutional Executive Officer Signature – Date

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New Academic Degree Program Questions:

- 1 Describe how the degree program will be administered including the name and title of person(s) who will be responsible for curriculum development and ongoing program review.

The Master of Science in Engineering (MS Eng) will be offered through the Dean's Office of the Bagley College of Engineering (BCoE). Initial concentrations under the MS Eng will include General, Computational Engineering (CME), Biosystems Engineering (BSE) and Biomedical Engineering (BME). Utilizing existing courses and faculty across the college, students pursuing the MS Eng will take classes from the 8 departments and the 24 graduate programs currently offered to tailor their degree programs. Associate Dean, Kari Babski-Reeves, will serve as the graduate coordinator and lead faculty member for the program. She will be assisted by graduate coordinators in the CME, BSE, and BME programs in the oversight of these specific concentrations, and by 2 staff within the BCoE Dean's Office in the oversight of the general concentration.

- 2 Describe the educational objectives of the degree program including the specific objectives of any concentrations, emphases, options, specializations, tracks, etc.

The educational objectives of the Master of Science in Engineering (MS Eng) are to:

1. Develop students' advanced knowledge in the concentration areas of the degree.
2. Provide students with experience in the state-of-the-art research strategies and techniques in the concentration areas.
3. Provide students with hands on training in the concentration areas.
4. Prepare students for advanced workforce positions related to the concentration areas.

- 3 Describe any special admission requirements for the degree program including any articulation agreements that have been negotiated or planned.

Applicants to the Master of Science in Engineering must possess a Bachelor of Science (BS) in any engineering discipline and have a 3.00 BS GPA or 3.00 GPA on graduate level coursework. These requirements are identical to other engineering graduate programs at MSU.

- 4 Describe the professional accreditation that will be sought for this degree program. If a SACSCOC visit for substantive change will be necessary, please note.

None at this time.

- 5 Describe the curriculum for this degree program including the recommended course of study (appending course descriptions for all courses) and any special requirements such as clinical, field experience, community service, internships, practicum, a thesis, etc.

This Master of Science in Engineering (MS Eng) is a 30 credit hour minimum master's degree (some concentrations may require 33 hours), and thesis and non-thesis options may be offered for the concentrations. Each concentration has its own requirements in terms of required core courses and electives. All students must complete a minimum of 12 credit hours at the 8000 (full graduate) level. The concentrations include Engineering (general), Computational Engineering (CME), Biosystems Engineering (BSE) and Biomedical Engineering (BME). Utilizing existing courses and faculty across the college, students pursuing the MS Eng will take classes from the 8 departments and the 24 graduate programs currently offered to tailor their degree programs. Possible courses will be 6000-8000 levels in the following subject areas as related to a student's program of study: Agricultural and Biological Engineering (ABE), Aerospace Engineering (ASE), Civil Engineering (CE),

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Chemical Engineering (CHE), Computational Engineering (CME), Computer Science Engineering (CSE), Cybersecurity and Operations (CYSO), Electrical and Computer Engineering (ECE), Engineering Education (ENE), Industrial and Systems Engineering (IE), and Mechanical Engineering (ME).

- 6 Describe the faculty who will deliver this degree program including the members' names, ranks, disciplines, current workloads, and specific courses they will teach within the program. If it will be necessary to add faculty in order to begin the program, give the desired qualifications of the persons to be added.

All courses are currently taught under existing programs at MSU, either as split-level courses with undergraduate programs or at the full graduate level for other MS or PhD programs. For concentrations with required core, those requirements are taught by faculty in the respective academic units (for example, the Biomedical Engineering (BME) concentration core is taught by faculty in the Agriculture and Biosystems Engineering department (ABE). Elective courses are taught by faculty either within the BCoE or in closely related departments (e.g., biology, management, math/statistics, etc.). All existing faculty hold terminal degrees in their area of specialization.

- 7 Describe the library holdings relevant to the proposed program, noting strengths and weaknesses. If there are guidelines for the discipline, do current holdings meet or exceed standards?

The Mississippi State Library has adequate holdings for the proposed program. The following databases and more from the Mississippi State Library are relevant to the MS Eng program:

- Academic Search Premier
- CloudSource+ and CloudSourceOA that search multiple databases, journal publishers, index open access scholarly journal articles, open textbooks, and open education resources
- eBooks from EBSCO
- ERIC
- Over 2.9 million volumes (MSU Library's online catalog); Over 11,000 print volumes in the local collections at MSU libraries
- 200,000 electronic journals in an extraordinary range of computer science-related subjects and full-text content
- Access to electronic journals sufficient to meet the needs of baccalaureate cybersecurity studies.
- Discipline-based research guides covering resources in computer science, information technology, scholarly communication and more
- Access to virtual training opportunities through the library's MaxxSouth Digital Media Center (DMC) (ex.: Excel, Adobe InDesign and other technology) online.
- ILL and document delivery services for obtaining materials not owned by MSU Libraries.

- 8 Describe the procedures for evaluation of the program and its effectiveness in the first five years of the program, including admission and retention rates, program outcome assessments, placement of graduates, changes in job market need/demand, ex-student/graduate surveys, or other procedures.

The Master of Science in Engineering (MS Eng) program will be evaluated using the same procedures by which all degree programs are evaluated. MSUs Office of Institutional Research & Effectiveness uses a yearly continuous improvement process where educational outcomes and student learning objectives are measured using direct and indirect assessments that indicate attainments of these objectives and outcomes. Results from these assessments are used to drive modifications and changes in the program. All students will complete the exit survey required of all students at MSU and in the Bagley College of Engineering to track employment and placement of graduates. Students will also be evaluated based on completion of comprehensive examinations as well as either a project evaluation or a defense evaluation.

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- 9 What is the specific basis for determining the number of graduates expected in the first five years?

We expect to incrementally enroll students in the Master of Science in Engineering (MS Eng) program over a five-year period. It typically takes students two years to complete an MS degree, so we expect to not see any graduates within the first two years. We have selected our numbers based on admissions, enrollment, and graduation information for our other similar degree programs, such as the Master of Engineering program. This program is unique in that it will allow students to build a customized program of study that fits their needs within the Engineering, Biosystems, Biomedical and Computational Engineering concentrations. Students will be recruited through online and in-person initiatives and through the Bagley College of Engineering overall graduate recruitment efforts. It was determined that this degree was necessary after discussing with the graduate coordinators in the proposed concentration areas and areas where we could fill the gap in degree offerings. After speaking with the graduate coordinators, the department heads and the Dean's Office, we determined that there was a need and a space for a program of this nature. We expect this program to increase our enrollment in graduate education both online and on campus and we expect that the students in this program will be able to contribute positively to graduate education within the Bagley College of Engineering.

- 10 Using expected enrollment, provide the total anticipated budget for the program including implementation and 4 subsequent years (total of 5 years) of operation; any anticipated direct, indirect, and incremental costs necessary to start the program; anticipated, incremental annual revenue based on student enrollment; and other sources of funding.

Please explain what has been included in the costs and revenues.

Start-Up Costs: one-time costs associated with offering this program

Direct, Incremental Costs: additional annual costs to the university as a result of offering this program

Incremental Revenue: additional annual revenue assuming that this program will bring in new students paying full tuition

Non-Tuition Revenue: external funds, grants, contracts or other revenues attributable to the addition of this program

Differential: all revenues minus all costs

Year	Incoming Students	Total Enrollment	Start-Up Costs	A Additional Annual Costs	B Additional Annual Revenue	C Non-Tuition Revenue	(B+C)-A Differential
2023-24	5	5	\$50,000	\$90,000	\$55,275.00	0	-\$34,725
2024-25	8	13		\$90,000	\$143,715.00	0	\$53,715
2025-26	10	19		\$90,000	\$210,045.00	0	\$120,045
2026-27	15	28		\$90,000	\$309,540.00	0	\$219,540
2027-28	20	40		\$90,000	\$442,200.00	0	\$352,200
TOTAL	58	105	\$50,000	\$450,000	\$1,160,775.00	0	\$710,775

- 11 Program Demand: Select one or both of the following to address student demand:

☐ Survey of Student Interest

Number of surveys administered:

[Click or tap here to enter text.](#)

Number of completed surveys returned:

[Click or tap here to enter text.](#)

Percentage of students interested in program:

[Click or tap here to enter text.](#)

Include a brief statement that provides additional information to explain the survey.

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[Click or tap here to enter text.](#)

☒ Market Analysis or Evidence of Labor Market Need

It was determined that this degree was necessary after discussing with the graduate coordinators in the proposed concentration areas and areas where we could fill the gap in degree offerings. This faculty-led approach allowed us to begin working on a program proposal that could fill current and future needs. We expect this program to increase our enrollment in graduate education both online and on campus and we expect that the students in this program will be able to contribute positively to graduate education within the Bagley College of Engineering.

We anticipate that students will be interested in this program if they are looking to advance their knowledge in the concentration areas of the degree, obtain experience in the state-of-the-art research strategies and techniques in the concentration areas or hands on training in the concentration areas, or prepare for advanced workforce positions related to the concentration areas. Successful students for this program will have a bachelor's degree in engineering or a related discipline and will be looking for additional advancement upon their bachelor's degree.

12 Employment Opportunities for Graduates (state, region, nation):

Students who receive the Master of Science in Engineering (MS Eng) degree will be qualified for a wide range of engineering and related positions depending on their previous bachelor's education and if they select the thesis or non-thesis route within the MS Eng program. Occupational Employment and Wages as of May 2022 from the US Bureau of Labor Statistics for "Engineers, All Other" (all engineers not listed separately) indicated there were over 150,000 persons employed in these positions with an average annual salary of \$111,280 (<https://www.bls.gov/oes/current/oes172199.htm>). Data for Mississippi and southeast region are presented below.

Area Name	Employment	Hourly mean wage	Annual mean wage
Mississippi (172199)	450	\$49.11	\$102,160
Alabama (0100000)	3550	\$62.46	\$129,920
Arkansas (0500000)	310	\$38.96	\$81,040
Florida (1200000)	8710	\$47.34	\$98,470
Georgia (1300000)	4600	\$49.78	\$103,530
Louisiana (2200000)	7440	\$48.11	\$100,060
Mississippi (2800000)	450	\$49.11	\$102,160
Tennessee (4700000)	4530	\$46.77	\$97,280
Texas (4800000)	9120	\$57.26	\$119,100