



A MEMORANDUM

DATE: April 5, 2022  
TO: Academic Deans Council  
FROM: Dr. Andy Perkins  
UCCC Chair  
RE: Change Notice 12

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 April 19, 2022 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

**BUSINESS**

Technical Change <u>IB 4103/6103</u> +Campus 8	<b>Approved</b>	<b>IB 4103/6103 Approval to Offer Campus 8 for International Business.</b> Campus: 1, 2, 5 & 8 Effective: Spring 2022
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**ENGINEERING**

Modification <u>CSE 3724</u>	<b>Approved</b>	<b>FROM: CSE 3723 Computer Organization.</b> (3). (Prerequisites: CSE 1384 with a C or better). Three hours lecture. How computer programs are executed by stored program computers. Topics include Boolean logic, design of combinational and sequential logic circuits, number systems and computer arithmetic, HW design and organization of a CPU, machine and assembly language programming. <b>TO: CSE 3724 Computer Organization.</b> (4). (Prerequisites: C in CSE 1384). Three hours lecture, two hours laboratory. How computer programs are executed by stored program computers. Topics include Boolean logic, design of combinational and sequential logic circuits, number systems and computer arithmetic, HW design and organization of a CPU, machine and assembly language programming. Method of Instruction: B Method of Delivery: F & O Campus: 1, 2, 5, & 6 CIP: 110701 30 Char: Computer Organization Effective: Fall 2022
Modification <u>CSE 4273/6273</u>	<b>Approved</b>	<b>CSE 4273/6273 Approval to update course content for Introduction to Computer Forensics.</b> Effective: Fall 2022

Modification <u>CSE 4733/6733</u>	<b>Approved</b>	<b>FROM: CSE 4733/6733 Operating Systems I. (3).</b> (Prerequisites: Grade of C or better in CSE 3723 and CSE 3183). Three hours lecture. Historical development of operating systems to control complex computing systems; process management, communication, scheduling techniques; file systems concepts and operation; data communication, distributed process management. <b>TO: CSE 4733/6733 Operating Systems I. (3).</b> (Prerequisites: C or better in CSE 3723 and CSE 3183, or C or better in CSE 2383 and ECE 3724). Three hours lecture. Historical development of operating systems to control complex computing systems; process management, communication, scheduling techniques; file systems concepts and operation; data communication, distributed process management. Method of Delivery: F & O Effective: Fall 2022
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2. Program Proposals by college/school:

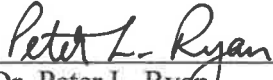
**ENGINEERING**

Modification	<b>Degree: MS</b> <b>Major: Cyber Security and Operations</b>	<b>Approved</b>	Modified program and removed concentrations. Approved by Graduate Council.  Effective: Fall 2022
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All of the proposals were approved with the exception of the following:

Proposals\*\*

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\_\_\_\_\_  
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:** Bagley College of Engineering

**Department:** Computer Science & Eng.

**Contact Person:** Dr. T.J. Jankun-Kelly

**Mail Stop:** 9637 **E-mail:** tjkc@cse.msstate.edu

**Nature of Change:** Remove concentrations  
Modify program

**Date Initiated:** 3/22 **Effective Date:** 8/22

**Current Degree Program Name:** Cyber Security & Operations (Starkville & Distance)

**Major:** MS

**Concentration:** Cyber Operations, Cyber Defense

**Summary of Proposed Changes:**

Remove Concentrations; modify program

**Approved:**

**Date:**

\_\_\_\_\_  
Department Head

\_\_\_\_\_  
Chair, College or School Curriculum Committee

\_\_\_\_\_  
Dean of College or School

  
\_\_\_\_\_  
Chair, University Committee on Courses and Curricula

\_\_\_\_\_  
3/30/2022

  
\_\_\_\_\_  
Chair, Graduate Council (if applicable)

\_\_\_\_\_  
4/1/2022

  
\_\_\_\_\_  
Chair, Deans Council

\_\_\_\_\_  
20<sup>th</sup> April 2022



## 1. Catalog Description

The Master of Science in Cyber Security and Operations is designed for students who wish to help meet the challenges posed by increasing cyber-threats. Using a multidisciplinary approach, the program is designed to provide students with a focused education within a broad analytical framework for evaluating, understand, and solving cyber security problems. Starkville-campus and online programs are offered, thesis or non-thesis.

The degree will focus on those aspects of cyber security that are needed to operate in the cyber domain. Material will prepare the student for advanced operations in the cyber domain such as penetration testing, after action analysis, and malware analysis. This degree is designed to satisfy the requirements for the Center of Academic Excellence in Cyber Operations program of the Department of Defense.

For a list of online tuition, instructional support, and other distance fees, please see the Controller's web site at <https://www.controller.msstate.edu/accountservices/tuition/>.

## 2. Graduate Degree Curriculum Outline

Deletions in *italics* and additions in **bold**.

CURRENT Degree Description	PROPOSED Degree Description
Degree: Cyber Security and Operations Major: MS (Thesis & Non-Thesis) Concentrations: <i>Cyber Defense, Cyber Operations</i>	Degree: Cyber Security and Operations Major: MS (Thesis & Non-Thesis) Concentrations: <b>None</b>



<u>Concentration: Cyber Defense</u>		(Removed)	
• <i>BIS 6113 Business Information Systems Security Management</i>	3		
• <i>CSE 6273 Introduction to Computer Forensics</i>	3		
• <i>Advanced Cyber Defense electives</i>	9		
<u>Concentration: Cyber Operations</u>		(Removed)	
• <i>CSE 6363 Software Reverse Engineering</i>	3		
• <i>CSE 8753/ECE 8823 Wireless Networks</i>	3		
• <i>Advanced Cyber Operations electives</i>	9		
<u>Thesis or Non-Thesis Option</u>	6	<u>Thesis or Non-Thesis Option</u>	6
• Thesis Option: CSE 8000 Thesis Research/Thesis in Computer Science and Engineering: 6 hours		• Thesis Option: CSE 8000 Thesis Research/Thesis in Computer Science and Engineering: 6 hours	
• Non-Thesis Option: 6 hours of CSE or ECE electives		• Non-Thesis Option: 6 hours of CSE or ECE electives	
Total Hours	31	Total Hours	31

### 3. Justification

Due to changes in requirements for the National Security Agency Center for Academic Excellence (CAE) in Cyber Operations, the MS CYSO degree must be modified to codify these requirements. In addition, due to lack of interest and need for the Defense concentration, it has been removed. As a program cannot have a single concentration, the Cyber Operations “concentration” will be retired and folded as the only part of the degree.

### 4. Learning Outcomes

Our learning outcomes have been updated to match CAE requirements:

- **Advanced knowledge in Cyber Operations** Students will be able to apply security first principles and practices. Measured via technical competency at the Comprehensive Exam and our Core classes.
- **Ability to Communicate Effectively** Students will be able to communicate effectively in a variety of professional contexts. Measured via presentation quality in courses and Comprehensive Exam.
- **Ethical Preparation** Students will be able to make informed judgements in security practice based on legal and ethical principles. Evaluated based upon ethical in-class exercises.
- **Ability to Work as a Team** Students will function effectively as a member or as leaders in activities appropriate to cyber security and operations. Measured via group briefing exercises.
- **Demonstrable Operational Ability** Students will be able to analyze and evaluate systems with respect to maintaining cyber operations in the presence of risks and threats. Measured via threat mitigation exercises.

### 5. Proposed 4-Letter Abbreviation

The MSU registrar has adopted CYSO as the abbreviation of Cyber Operation degrees.

### 6. Effective Date

Fall 2022





MISSISSIPPI STATE UNIVERSITY  
— JAMES WORTH —  
**BAGLEY**  
COLLEGE OF ENGINEERING

**OFFICE OF THE  
DEAN OF ENGINEERING**

Dr. Kari Babski-Reeves, CPE  
Larry G Brown Professor and Head, Associate Dean  
kari@bagley.msstate.edu

March 10, 2022

To Whom It May Concern

The Bagley College of Engineering Dean's Office, the Dean of the Graduate School (TGS), and the Provost's Office have agreed to temporarily allow a degree modification for the MS in Cybersecurity and Operations to be approved despite conflicting with university policies regarding the required number of 8000 level courses needed to graduate. This approval is to ensure there is not an impediment to MSU pursuing NSA recertification. The Computer Science and Engineering (CSE) department will submit a degree modification no later than March 2024 that aligns the degree program with university requirements.

Kindest Regards

Kari Reeves, PhD  
Larry G Brown Professor and Head, ISE  
Associate Dean, BCoE

Peter Ryan, PhD  
Executive Vice Provost and Dean of the Graduate School



MISSISSIPPI STATE UNIVERSITY  
JAMES WORTH  
**BAGLEY**  
COLLEGE OF ENGINEERING

DEPARTMENT OF  
COMPUTER SCIENCE & ENGINEERING

Professor and Billie J. Ball Endowed Professor in Engineering  
Director of the Social, Therapeutic, and Robotic Systems (STaRS) Lab  
cbethel@cse.msstate.edu

March 4, 2022

Dr. Andy Perkins, Chair  
University Committee on Courses and Curricula  
PO Box 5268  
Mississippi State, MS 39762


Dr. Perkins:


The Computer Science and Engineering faculty voted to support the following changes at a faculty meeting held on March 4, 2022.


- Modifying lecture topics and adding an additional 1 credit hour lab component to CSE 3723
- Modifying lecture topics for CSE 4733/6733 Operating Systems I and CSE 4273/6273 Introduction to Computer Forensics
- Modifying the MS in Cyber Security and Operations to remove concentrations and change a number of the required courses

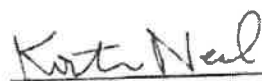
Please feel free to contact me if there are any questions or concerns.

Sincerely,

  
Cindy Bethel, Ph.D.  
CSE Courses and Curricula Committee Chair  
Professor

  
Jingdao Chen, Ph.D.  
CSE Courses and Curricula Committee Member  
Assistant Professor

  
Joshua Crowson  
CSE Courses and Curricula Committee Member  
Instructor

  
Kortni Neal  
CSE Courses and Curricula Committee Member  
Instructor