COMPUTER AND COMPUTER ENGINEERING

MAJORS

- Computer Engineering
- Computer Science (Applied Computer Science) BS
- Computer Science BS
- Cybersecurity BAS*
- Information Technology BAS*

MINORS

- Computer Science Minor
- Information Security Minor
- Information Technology Minor
- Software Engineering Minor

CERTIFICATES

- Applied Cybersecurity Certificate
- Computer Networking Certificate
- Software Engineering Certificate

CONTACT US

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THE UNIVERSITY OF SOUTHERN MISSISSIPPI
College of [illegible]

Need help? Co[illegible]s!

Post-secondary students in the State of Mississippi often choose to attend a Mississippi community college (MS CC) and earn an associate degree before transferring to the University of Southern Mississippi (USM). To make this transition as smooth as possible and to ensure no credits are lost, we have created this transfer guide. In most, but not all, cases, students may complete a bachelor's degree in what we refer to as a "2+2" format:

2 years at a MS CC for an associate degree, which includes general education coursework

+

2 years at USM to complete the bachelor's degree

Please use the key below to determine which courses you must, should, or could take at a Mississippi community college before transferring to Southern Miss.

KEY

MUST	Students do not complete these requirements and Miss cannot complete their bachelor's degree in the 2+2 format.
SHOULD	Students should complete these requirements in order to have the smoothest transition to Southern Miss. It may still be possible to complete a bachelor's degree in the 2+2 format without taking these courses, but it will be challenging.
COULD	Students could complete these requirements if they desire. Not taking these courses prior to transferring will not affect a student's ability to complete their bachelor's degree in the 2+2 format.
CALCULUS READINESS	Calculus is required on this degree plan. Students should arrive at Southern Miss ready to take Calculus I, which means they must have completed Trigonometry or have a Math ACT subscore ≥ [illegible]. Students may complete Calculus I prior to transferring if they desire.

NOTE: *This document is intended as a guide; it does not guarantee graduation in the 2+2 format. Degree requirements are subject to change. Please consult the school of your desired major for up-to-date requirements.*

Additional majors are available from the other Southern Miss colleges.

College of Education & Human Sciences
Hattiesburg 601.266.4568
Gulf Park 228.214.3249

College of Nursing & Health Professions
Hattiesburg 601.266.5445
AskCNHP@usm.edu

College of Business & Economic Development
Hattiesburg 601.266.4653
Gulf Park 228.214.3447
business@usm.edu

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COMPUTER ENGINEERING

PROGRAMMING

Computer engineering encompasses all aspects of designing, building, and programming computer systems. It combines fundamentals of computer science and electrical engineering in one major. It introduces students to both hardware (electronic circuits) and software (programming of computer systems. This degree program prepares graduates for successful, profitable, and lifelong careers in computer systems design, mobile and cloud computing devices, sensor networks, reconfigurable logic, software engineering, cybersecurity, Internet of Things, and machine intelligence applications.

RESEARCH AT USM

Many faculty members are engaged in research in cyber-physical systems, robotics, embedded systems, reconfigurable computing, computer vision, virtual/augmented reality, bioinformatics, cybersecurity, broadening participation in computing, and other areas.

SCHOLARSHIPS

There are program-specific scholarships available each year. Students should apply through the "Golden Opportunities" GO System.

CAREER OUTLOOK

Graduates of the program pursue job opportunities with various industries, government agencies, and business employers in Mississippi and throughout the region. Common industries include technology, manufacturing, finance, and healthcare. Potential positions are software developer, hardware engineer, network engineer, systems analyst, embedded systems engineer, robotics engineer, data scientist, project manager, technical sales engineer, and more.

KNOWLEDGE & SKILLS

Students take courses in

- Computer systems and networks
- Digital and analog electronics
- Wireless and network security
- Data structures
- Cyber law and ethics
- And more

The degree culminates in a senior design project in the student's area of interest.

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COMPUTER ENGINEERING BS

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NOTE This degree plan cannot be completed in the 2+2 format due to [illegible] prerequisites. Students desiring to begin at community college could take any of the [illegible] those students should expect it to still take four years at Southern Miss to complete their degree after transferring.

CHECKLIST | COURSES

Updated August 2023

Courses at Community College

☐	**COMPUTER PROGRAMMING I** (Select 1)	
	CSC 1613 Computer Programming I	**CSC 101/I**
	CSC 2134 Programming I with C++	
	IST 1714 Java Programming Language	
	IST [illegible] [illegible]	
	IST 2374 C Programming Language	
	IST 2584 C# Programming Language	
☐	**COMPUTER PROGRAMMING II** (Select 1)	
	CSC 2623 Computer Programming II	**CSC [illegible]**
	CSC 2144 Programming II with C++	Computer Science II
	IST 2724 [illegible]	
	IST 1174 Advanced Programming in Python	
	IST 2384 Advanced [illegible]	
	IST 2594 Advanced C# Programming Language	
☐	**CSC 2543** Computer Organization and Assembly Language	**CE 2[illegible]** Computer Systems
☐	**CSC 2833** Discrete Structures	**CSC 300** Foundations of Computer Science
☐	**CSC [illegible]** Data Structures	**CSC [illegible]** Data Structures [illegible]

NOTE: *This document is intended as a guide. Please contact [illegible] Computing Sciences and Computer Engineering at 601.266.49[illegible] degree requirements.*

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COMPUTER ENGINEERING BS

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NOTE T[illegible] prerequisites. Stu[illegible] a[illegible] requirements; however, those [illegible] should [illegible] complete their degree after transferring.

CHECKLIST

CONTACT

	Course	Equivalent Course
☐	CHE 1213 and [illegible] (or CHE 1214)	General Chemistry I Lecture and [illegible]
☐	PHY 2413 and PHY 2411 (or PHY 2414)	PHY 111/L General Physics I Lecture and Lab
☐	PHY 2423 and PHY 2421 (or PHY 2424)	PHY 112/L General [illegible] e and Lab
☐	MAT 1613 or MAT 1815	MAT 167 Calc[illegible]
☐	MAT 1623 or [illegible] MAT 1825	MAT [illegible]68 Calculus II
☐	MAT 2613	MAT 169 Calculus III
☐	MAT 2913	[illegible] Differential Equations

NOTE: *This document is intended as a guide. Please contact [illegible] School of Computing Sciences and Computer Engineering at 60[illegible] 49 or [illegible] degree requirements.*

COMPUTER SCIENCE

COMPUTER SCIENCE, APPLIED COMPUTER SCIENCE

PROGRAM INFO

Computer science students learn to analyze a problem then identify and define the computer requirements appropriate to its solution. The program provides career-oriented computing education that enables graduates to enter industry and government. Students select concentrations in specific content areas to match their interests and career goals.

RESEARCH AT USM

Computer science faculty members are actively engaged in research and creative efforts and eagerly participate in service to the school, college, university, community, and to their profession. Students participate in research in areas including AI, machine learning, robotics, bioinformatics, virtual reality, and cybersecurity.

CAREER OUTLOOK

The career outlook for computer science majors is bright. The profession continues to grow. With the increasing importance of technology in business and daily life, our graduates are well-positioned to pursue a variety of exciting and lucrative career paths.

Some of the most popular career paths for computer science majors are software development, data science and analytics, cybersecurity, network engineering, artificial intelligence and machine learning, and database administration. Graduates of the program work in a range of industries, including technology, finance, healthcare, and entertainment.

According to the Bureau of Labor Statistics, employment of computer and information technology occupations is projected to grow 15% from 2021 to 2031, much faster than the average for all occupations. This growth is driven by increased emphasis on cloud computing, big data, and mobile computing, as well as other technological advances.

SCHOLARSHIPS

Students should apply through the "Golden Opportunities" GO System.

KNOWLEDGE & SKILLS

Computer science majors learn:

- Programming languages
- Data structures and algorithms
- Computer architecture and operating systems
- Networking and security
- Databases
- AI and machine learning
- Project management
- Critical thinking
- Problem solving
- Communication

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THE UNIVERSITY OF SOUTHERN MISSISSIPPI

COMPUTER SCIENCE BS AND COMPUTER SCIENCE (APPLIED COMP

(Page 1 of 2) Complete [illegible] including general education coursework, and...

MUST [illegible] education lab sciences from the list on page two.

CALCULUS READINESS Pass MAT 1323 Trigonometry (MAT 103 at Southern Miss) [illegible]

COULD Take calc [illegible]

Courses at Community College		Equivalent Courses at Southern Miss
COMPU (Select 1)		
CSC 1113	Computer Concepts	[illegible]
CSC 1123	Computer Applications I	Seminar in Computing
CSC 1133	Computer Applications II	
COMPUTER PROGRAMMING I (Select 1)		
CSC 1613	Computer Programming I	CSC 1071
CSC 2134	Programming I [illegible]	Computer Science I
IST 1714	Java Pro[illegible]	
IST 1724	Programming in Python	
IST 2374	C Programming Language	
IST 2584	C# Programming	
COMPUTER PROGRAMMING II (Select 1)		
CSC 2623	Computer Programming II	CSC 102
IST 2724	Advanced Java Programming Language	
IST 1764	Advanced Programming in Python	
IST 2384	Advanced C Programming Language	
IST 2594	Advanced C# Programming Language	
CSC 254[illegible]	Compu[illegible]	CE 220 [illegible] Organization and Assembly Lang[illegible]
CSC 2844	[illegible]	CSC 307 Data Stru[illegible]tures & Algorithm Analysis
		MAT 167 Calculus I
		MAT 16[illegible] Calculus II

NOTE: *This document is [illegible] Please contact the School of Computing Sciences degree requirements.*

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COMPUTER SCIENCE BS AND COMPUTER SCIENCE (APPLIED COMPUTER SCIENCE) BS 2+2

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Complete all requirements for a MS community college associate degree, including general education coursework, and...

MUST Take the 5 major requirements on page one and select your 2 general education lab sciences from the list below.

CALCULUS READINESS Pass MAT 1323 Trigonometry (MAT 1003 at Southern Miss) or have a Math ACT subscore ≥ 20

COULD Take calculus courses.

CHECKLIST COURSES

Updated August 2023

Courses at Community College	Equivalent Courses at USM
LAB SCIENCE OPTIONS (Select 2) (Should duplicate gen. ed. courses)	
BIO 1133 and BIO 1131 (or BIO 1134)	BSC 110/L Principles of Biology I: Lecture and Lab
BIO 1143 and BIO 1141 (or BIO 1144)	BSC 111/L Principles of Biology II: Lecture and Lab
CHE 1213 and CHE 1211 (or CHE 1214)	CHE 106/L General Chemistry II: Lecture and Laboratory
CHE 1223 and CHE 1221 (or CHE 1224)	CHE 107/L General Chemistry II: Lecture and Laboratory
GLY 1113 and GLY 1111 (or GLY 1114)	GLY 101/L Physical Geology Lecture and Laboratory
GLY 1123 and GLY 1121 (or GLT 1124)	GLY 103/L Historical Geology Lecture and Laboratory
PHY 2413 and PHY 2411 (or PHY 2414)	PHY 111/L General Physics I: Lecture and Laboratory
PHY 2423 and PHY 2421 (or PHY 2424)	PHY 112/L General Physics II: Lecture and Laboratory
PHY 2513 and PHY 2511 (or PHY 2514)	PHY 201/L General Physics I w/Calculus Lecture and Lab
PHY 2523 and PHY 2521 (or PHY 2524)	PHY 202/L General Physics II w/Calculus Lecture and Lab

NOTE: *This document is intended as a guide. Please contact the School of Computing Sciences and Computer Engineering at 601.266.4949 or computing@usm.edu to check on current degree requirements.*

CYBERSECURITY

PROGRAMING

The Bachelor of Applied Science degree in Cybersecurity provides the opportunity to transfer up to 60 hours of technical credit to a 4-year degree program in a growing technical field. Students will gain skills through coursework offered across the computer science and information technology programs that prepare them for careers in cybersecurity defense, risk assessment, and countermeasures designed to protect against cyber threats.

CAREER OUTLOOK

With a cybersecurity degree, graduates can pursue a variety of career paths. Common job titles include cybersecurity analyst, security consultant, penetration tester, cybersecurity engineer, information security manager, and cybersecurity educator.

RESEARCH FOCUS

Students will work with faculty to gain hands-on experience in the ever-evolving computing and cybersecurity fields and to gain the skills necessary to succeed in a wide range of professional domains. Our faculty consists of researchers known nationally for their innovative work and professionals with real-world experience.

KNOWLEDGE & SKILLS

- Network security: secure networks, identify vulnerabilities, and implement security controls.
- Cyber threat intelligence: monitor and analyze cyber threats and develop strategies to prevent them.
- Cryptography: encryption, decryption, digital signatures, and other techniques for securing data and communications.
- Cybersecurity laws and policies: legal and regulatory frameworks related to cybersecurity, including data protection and privacy laws.
- Incident response: respond to cyber incidents, including detecting, containing, and mitigating the effects of a breach.
- Risk management: identify and manage cybersecurity risks, including assessment, mitigation, and monitoring.
- Ethical hacking: conduct penetration testing, vulnerability assessments, and other techniques to test the security of systems and networks.
- Cybersecurity strategy and management: develop and implement cybersecurity strategies and

SCHOLARSHIPS

Scholarships available each year. Students should apply through the "Golden Opportunities" GO System.

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Computing Sciences and Computer Engineering

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CYBERSECURITY BAS 2+2

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Complete all requirements for a MS community [illegible] including general educati[illegible]

COULD [illegible] take the [illegible] requirements below

NOTE [illegible] This major is [illegible] designed to accept up to 60 hours of technical cr[illegible].

Updated August 2023

CHECKLIST

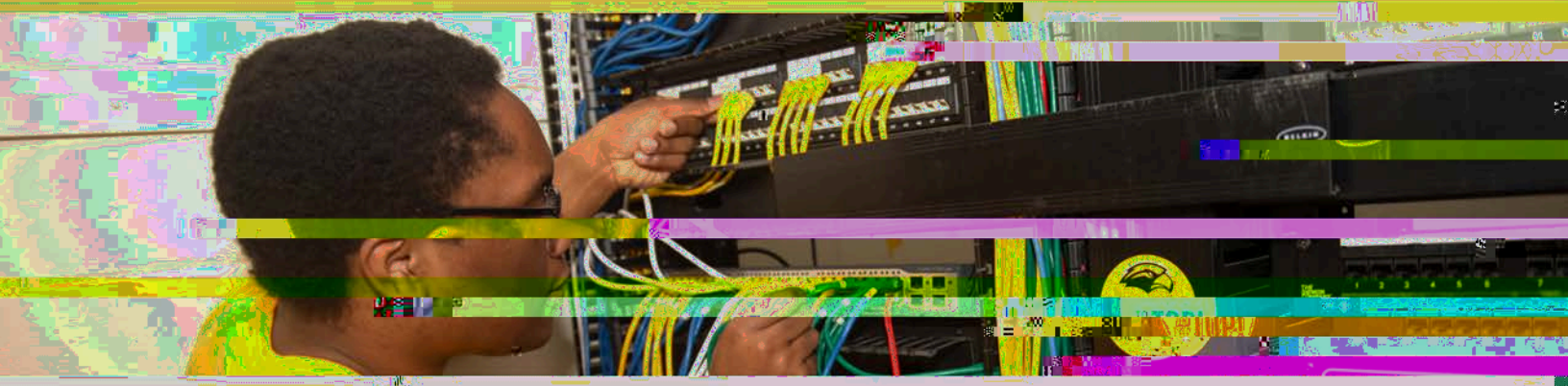
COURSES

Courses at [illegible]

COMPUTER PRO[illegible]AMMING I (Select 1)		
CSC 1613	Computer Programming I	CS[illegible] 101/L
CS[illegible]	[illegible]	[illegible]
IST 1714	Java Programming Language	
IST 1724	Programming in Python	
IST 2[illegible]4	C Programming Language	
IST 258[illegible]	[illegible]	
COMPUTER PROGRAMMING II (Select 1)		
CS[illegible] 2623	Computer Programming	CSC 102
CSC 2144	Programming II with C++	Computer Science II
IST 2724	Advanced Java Programming Language	
IST 1764	Advanced Programming in Python	
IS[illegible]	Advanced C Program[illegible]	
IST 2594	Advanced [illegible]	
CSC 2543	Computer Organization and A[illegible]	CE 2[illegible]
CSC 2844	Data Structures	Data Structures [illegible]

NOTE: This document i[illegible] intended as a guide. Please contact the School of Computing Scienc[illegible] and Computer Engine[illegible] degree requirements.

INFORMATION TECHNOLOGY



PROGRAM INFO

We prepare our students [illegible] administe[illegible] information systems.
The program includes c[illegible] wo[illegible]

- Local and wide-area networking
- Network security
- Network management
- Network design
- Application development
- Virtualization technologies

CAREER OUTLOOK

According to the Bureau of Labor Statistics the median annual wage for IT workers is $84K, more than double the [illegible] median for all workers. The BLS is also projecting [illegible] job growth for IT occupations over the next ten years, much faster than the average for all occupations.

Graduates of this program find employment as systems administrators, systems analysts, network administr[illegible] in other technology-related fields.

The IT program is part of the Cisco Networking Academy [illegible] CCNA and IT Foundations courses, which can lead to industry certification.

The School of Computing Science and Computer Engineering is a CompTIA academic partner.

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RESEARCH AT USM

Our faculty are actively involved in research in artific[illegible] intelligence, machine learning, robotics, bioinformatics [illegible] image [illegible] broadening participat[illegible] computing. Students work on [illegible]arch at the undergraduate and g[illegible]

SCHOLARSHIPS

There are dozens of program-specific scholarships available each year. Students should apply through the "Golden Opportunities" GO System.

KNOWLEDGE & SKILLS

The program provides access to Microsoft and VMware software via annual subs[illegible] security training through Fortinet Academy on the latest firewall technologies. The academies and [illegible]tions allow IT students to achieve a [illegible] mastery of the most cur[illegible]

IT grad[illegible] skilled in:

- Network management
- Complex problem solving
- Analysis
- Project management
- Communication
- Teamwork
- Adaptability

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INFORMATION TECHNOLOGY BS 292

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Complete all requirements for a MS community college associate degree, including general education coursework, and...

SHOULD Take as many IST courses as you can from the list on page two but no more than one from each row.

COULD Take 1 of the Calculus options on page two

Courses at Community College	Equivalent Courses at Southern Miss
COMPUTER CONCEPTS OR APPLICATIONS (Select 1)	
CSC 1123 Computer Applications I	Seminar in Computing
CSC 1133 Computer Applications II	
COMPUTER PROGRAMMING I (Select 1)	
CSC 1613 Computer Programming I	CSC 101/L
CSC 2134 Programming I with C++	Computer Science I
IST 1714 Java Programming Language	
IST 1724 Programming in Python	
IST 2374 C Programming Language	
IST 2584 C# Programming Language	
COMPUTER PROGRAMMING II (Select 1)	
CSC 2623 Computer Programming II	CSC 102
CSC 2144 Programming II with C++	Computer Science II
IST 2724 Advanced Java Programming Language	
IST 17[illegible]	
IST 2384 Advanced C Programming	
IST 2594 Advanced C# Programming Language	

NOTE: This document is intended as [illegible] and Computer Engineering at [illegible] of computing@[illegible] degree requirements.

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INFORMATION TECHNOLOGY BS

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Complete all requirements for a MS community college associate degree, including general education coursework, and...

- **MUST** Take the 3 introductory major requirements on page one.
- **SHOULD** Take as many IST courses as you can from the list below but no more than one from each row.
- **COULD** Take 1 of the Calculus options below.

Checklist | Courses

Updated August 2023

Courses at Community College	Equivalent Courses at Southern Miss
IST 1123 or IST 1124	ITC 102/L Systems Architecture
IST 1133 or IST 1134	ITC 131/L Intel Network Technologies
IST 1223 or IST 1224	ITC 132/L Introduction to Routers
(Select 1) IST 1213 or IST 1214 or IST 1253 or IST 1254	ITC 283 Client Configuration ITC 177/L* Linux Fundamentals
IST 1143, IST 1144, IST 1623, IST 1624, IST 2213, or IST 2214	ITC 242 Cybersecurity Principles
IST 1	ITC 285 Server Administration
MAT 1513 or MAT 1613 or MAT 1815 Calculus	MAT 103 or MAT 114 or MAT 167 Calculus

NOTE: *This document is intended as a guide. Please contact the School of Computing Sciences and Computer Engineering at 601.266.4949 or [illegible]@usm.edu to check on current degree requirements.*