

School of

COMPUTING SCIENCES AND COMPUTER ENGINEERING

MAJORS

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

* Available fully online

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

 601.266.4949  computing@usm.edu

 usm.edu/computing-sciences-computer-engineering

 [@usmartsandsciences](https://www.instagram.com/usmartsandsciences)





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 to complete their bachelor's degree. 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 who do not complete these requirements at a MS CC cannot complete their bachelor's degree in the 2+2 format.
 SHOULD	Students should complete these requirements at a MS CC 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 at a MS CC 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 ≥ 26 . 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 228.214.3340

College of Nursing & Health Professions

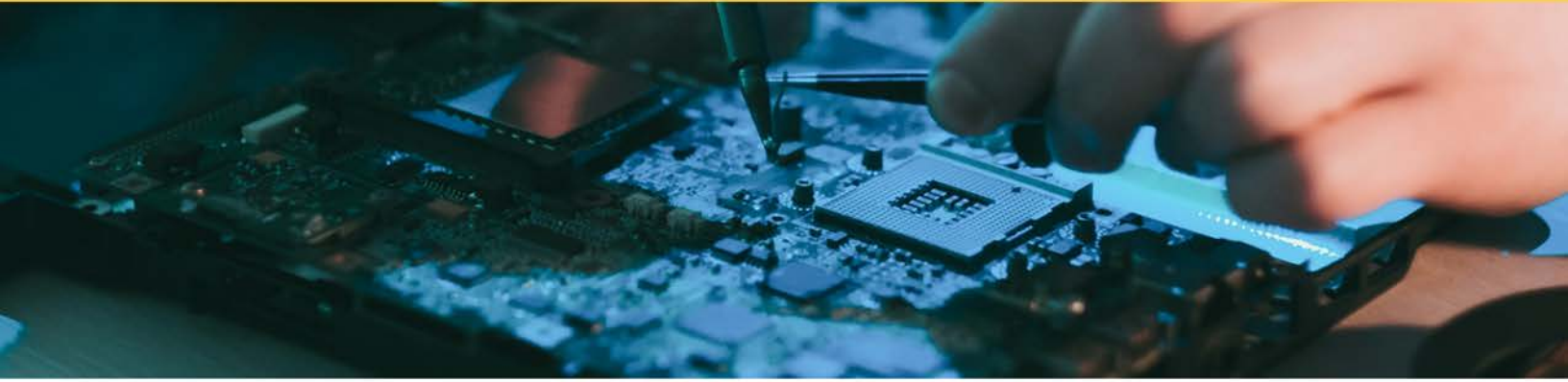
Hattiesburg 601.266.5445
 AskCNHP@usm.edu

College of Business & Economic Development

Hattiesburg 601.266.4659
 Gulf Park 228.214.3447
 business@usm.edu



COMPUTER ENGINEERING




PROGRAM INFO


Computer engineering encompasses all aspects of designing, building, and programming computer systems. It combines fundamentals of computer science and electrical engineering in one major, as 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 embedded computing devices, sensor networks, reconfigurable logic, software engineering, cybersecurity, Internet of Things, and machine intelligence applications.

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.

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RESEARCH AT USM

Many of our students work with faculty on research in cyber-physical systems, robotics, embedded systems, reconfigurable computing, computer vision, artificial intelligence, machine learning, 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.

KNOWLEDGE & SKILLS

Students take courses in

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

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

COMPUTER ENGINEERING BS

(Page 1/2)



NOTE This degree plan cannot be completed in the 2+2 format due to course prerequisites. Students desiring to begin at community college could take any of the courses below, which will fulfill degree requirements; however, 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	Equivalent Courses at Southern Miss
<input type="checkbox"/>	<p>COMPUTER PROGRAMMING I (Select 1)</p> <p>CSC 1613 Computer Programming I CSC 2134 Programming I with C++ IST 1714 Java Programming Language IST 1724 Programming in Python IST 2374 C Programming Language IST 2584 C# Programming Language</p>	<p>CSC 101/L Computer Science I</p>
<input type="checkbox"/>	<p>COMPUTER PROGRAMMING II (Select 1)</p> <p>CSC 2623 Computer Programming II CSC 2144 Programming II with C++ IST 2724 Advanced Java Programming Language IST 1764 Advanced Programming in Python IST 2384 Advanced C Programming Language IST 2594 Advanced C# Programming Language</p>	<p>CSC 102 Computer Science II</p>
<input type="checkbox"/>	<p>CSC 2543 Computer Organization and Assembly Language</p>	<p>CE 230 Computer Systems</p>
<input type="checkbox"/>	<p>CSC 2833 Discrete Structures</p>	<p>CSC 300 Foundations of Computer Science</p>
<input type="checkbox"/>	<p>CSC 2844 Data Structures</p>	<p>CSC 307 Data Structures & Algorithm Analysis</p>



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.

COMPUTER ENGINEERING BS

(Page 2/2)



NOTE This degree plan cannot be completed in the 2+2 format due to course prerequisites. Students desiring to begin at community college could take any of the courses below, which will fulfill degree requirements; however, 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	Equivalent Courses at Southern Miss
<input type="checkbox"/>	CHE 1213 and CHE 1211 (or CHE 1214)	CHE 106/L General Chemistry I Lecture and Laboratory
<input type="checkbox"/>	PHY 2413 and PHY 2411 (or PHY 2414)	PHY 111/L General Physics I Lecture and Lab
<input type="checkbox"/>	PHY 2423 and PHY 2421 (or PHY 2424)	PHY 112/L General Physics II Lecture and Lab
<input type="checkbox"/>	MAT 1613 or MAT 1815	MAT 167 Calculus I
<input type="checkbox"/>	MAT 1623 or MAT 1825	MAT 168 Calculus II
<input type="checkbox"/>	MAT 2613	MAT 169 Calculus III
<input type="checkbox"/>	MAT 2913	MAT 285 Differential Equations



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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 computer science program provides career-oriented computing education that enables graduates to enter industry and government sector positions with high-demand skills. Students select concentrations in specific content areas to match their interests and career goals.


CAREER OUTLOOK

The career outlook for computer science majors is bright, as the demand for skilled technology professionals continues to grow across all industries. 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 due to an increased emphasis on cloud computing, big data, and mobile computing, among other technologies.

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RESEARCH AT USM

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



SCHOLARSHIPS

There are dozens of program-specific scholarships available each year. 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
- Teamwork
- Communication

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

(Page 1/2)

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



- * MUST** Take the 5 major requirements below and select your 2 general education lab sciences from the list on page two.
- fx CALCULUS READINESS** Pass MAT 1323 Trigonometry (MAT 103 at Southern Miss) or have a Math ACT subscore ≥ 26 .
- 💡 COULD** Take calculus courses.

CHECKLIST

COURSES

Updated August 2023

	Courses at Community College	Equivalent Courses at Southern Miss
<input type="checkbox"/>	* COMPUTER CONCEPTS OR APPLICATIONS (Select 1) CSC 1113 Computer Concepts CSC 1123 Computer Applications I CSC 1133 Computer Applications II	CSC 111 Seminar in Computing
<input type="checkbox"/>	* COMPUTER PROGRAMMING I (Select 1) CSC 1613 Computer Programming I CSC 2134 Programming I with C++ IST 1714 Java Programming Language IST 1724 Programming in Python IST 2374 C Programming Language IST 2584 C# Programming Language	CSC 101/L Computer Science I
<input type="checkbox"/>	* COMPUTER PROGRAMMING II (Select 1) CSC 2623 Computer Programming II CSC 2144 Programming II with C++ 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 102 Computer Science II
<input type="checkbox"/>	* CSC 2543 Computer Organization and Assembly Language	CE 230 Computer Systems
<input type="checkbox"/>	* CSC 2844 Data Structures	CSC 307 Data Structures & Algorithm Analysis
<input type="checkbox"/>	💡 MAT 1613 or MAT 1815 Calculus I	MAT 167 Calculus I
<input type="checkbox"/>	💡 MAT 1623 or MAT 1825 Calculus II	MAT 168 Calculus II



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

(Page 2/2)

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.
- fx CALCULUS READINESS** Pass MAT 1323 Trigonometry (MAT 103 at Southern Miss) or have a Math ACT subscore ≥ 26 .
- 💡 COULD** Take calculus courses.

CHECKLIST

COURSES

Updated August 2023

☐
☐

Courses at Community College

Equivalent Courses at Southern Miss



LAB SCIENCE OPTIONS

(Select 2)
(Should duplicate gen. ed. courses)

BIO 1133 and BIO 1131
(or **BIO 1134**)

BIO 1143 and BIO 1141
(or **BIO 1144**)

CHE 1213 and CHE 1211
(or **CHE 1214**)

CHE 1223 and CHE 1221
(or **CHE 1224**)

GLY 1113 and GLY 1111
(or **GLY 1114**)

GLY 1123 and GLY 1121
(or **GLT 1124**)

PHY 2413 and PHY 2411
(or **PHY 2414**)

PHY 2423 and PHY 2421
(or **PHY 2424**)

PHY 2513 and PHY 2511
(or **PHY 2514**)

PHY 2523 and PHY 2521
(or **PHY 2524**)

BSC 110/L
Principles of Biological Science I Lecture and Lab

BSC 111/L
Principles of Biological Science II Lecture and Lab

CHE 106/L
General Chemistry I Lecture and Laboratory

CHE 107/L
General Chemistry II Lecture and Laboratory

GLY 101/L
Physical Geology Lecture and Laboratory

GLY 103/L
Historical Geology Lecture and Laboratory

PHY 111/L
General Physics I Lecture and Laboratory

PHY 112/L
General Physics II Lecture and Laboratory

PHY 201/L
General Physics I w/Calculus Lecture and Lab

PHY 202/L
General Physics II w/Calculus Lecture and Lab



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CYBERSECURITY



PROGRAM INFO

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 career growth 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 AT USM

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 industry, military, and government sector work 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 transfer.
- 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 policies, and manage cybersecurity programs and teams.

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SCHOLARSHIPS

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

CYBERSECURITY BAS 2+2



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







COULD Take the 4 major requirements below.

NOTE This major is designed to accept up to 60 hours of technical credits.

CHECKLIST

COURSES

Updated August 2023

	Courses at Community College	Equivalent Courses at Southern Miss
<input type="checkbox"/>	 COMPUTER PROGRAMMING I (Select 1) CSC 1613 Computer Programming I CSC 2134 Programming I with C++ IST 1714 Java Programming Language IST 1724 Programming in Python IST 2374 C Programming Language IST 2584 C# Programming Language	CSC 101/L Computer Science I
<input type="checkbox"/>	 COMPUTER PROGRAMMING II (Select 1) CSC 2623 Computer Programming II CSC 2144 Programming II with C++ 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 102 Computer Science II
<input type="checkbox"/>	 CSC 2543 Computer Organization and Assembly Language	CE 230 Computer Systems
<input type="checkbox"/>	 CSC 2844 Data Structures	CSC 307 Data Structures & Algorithm Analysis



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INFORMATION TECHNOLOGY (IT)



PROGRAM INFO

We prepare our students to design, implement, and administer complex client-server information systems.

The program includes coursework in

- 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 \$97K, more than double the national median for all workers. The BLS is also projecting 15% 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 administrators, solution developers, web masters, and in other technology-related fields.

The IT program is part of the Cisco Networking Academy Program and is a local academy for the CCNA and IT Foundations courses, which can lead to industry certification.

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

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RESEARCH AT USM

Our faculty are actively involved in research in artificial intelligence, machine learning, robotics, bioinformatics, image and video processing, cybersecurity, and broadening participation in computing. Students work on research at the undergraduate and graduate levels.



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 subscriptions and security training through Fortinet Academy on the latest firewall technologies. The academies and subscriptions allow IT students to achieve a mastery of the most current technologies used in industry environments globally.

IT graduates are skilled in:

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

INFORMATION TECHNOLOGY BS 2+2

(Page 1/2)

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



- * **MUST** Take the 3 introductory major requirements below.
- 👍 **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.

CHECKLIST

COURSES

Updated August 2023



Courses at Community College

Equivalent Courses at Southern Miss

<p>* COMPUTER CONCEPTS OR APPLICATIONS (Select 1)</p> <p>CSC 1113 Computer Concepts CSC 1123 Computer Applications I CSC 1133 Computer Applications II</p>	<p>CSC 111 Seminar in Computing</p>
<p>* COMPUTER PROGRAMMING I (Select 1)</p> <p>CSC 1613 Computer Programming I CSC 2134 Programming I with C++ IST 1714 Java Programming Language IST 1724 Programming in Python IST 2374 C Programming Language IST 2584 C# Programming Language</p>	<p>CSC 101/L Computer Science I</p>
<p>* COMPUTER PROGRAMMING II (Select 1)</p> <p>CSC 2623 Computer Programming II CSC 2144 Programming II with C++ IST 2724 Advanced Java Programming Language IST 1764 Advanced Programming in Python IST 2384 Advanced C Programming Language IST 2594 Advanced C# Programming Language</p>	<p>CSC 102 Computer Science II</p>



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INFORMATION TECHNOLOGY BS 2+2

(Page 2/2)

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

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

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 Internetworking 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 Installation and Configuration ITC 171/L Linux Fundamentals
👍 IST 1143, IST 1144, IST 1623, IST 1624, IST 2213, or IST 2214	ITC 242 Cybersecurity Principles
👍 IST 1243 or IST 1244	ITC 285 Server Administration
💡 MAT 1513 or MAT 1613 or MAT 1815 Calculus	MAT 102 or MAT 114 or MAT 167 Calculus



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