
Department of Computer Science and Information Technology

Bachelor of Science (B.S.) Information Sheet

The Department of Computer Science and Information Technology offers three **Bachelor of Science (B.S.)** degrees. There are eight (8) areas of study (concentrations) available under the three (3) majors.

- **B.S. in Computer Science (BS CSC – declare using major code: csc)**
 - **Computer Theory and Systems Concentration** This program concentrates on the technical areas of computing with an emphasis on programming and algorithm design. It includes a significant mathematics component.
 - **Intelligent Robotics Concentration** This program provides students with a background in software development for autonomous robots. Students will study math, computer science, artificial intelligence and robotics.
 - **Software Engineering Concentration** This program focuses on the areas needed to develop and manage large software systems. Topics include requirements, software design and architecture, testing, software quality assurance, and project management.
- **B.S. in Computer Information Systems (BS CIS – declare using major code: cmis)**
 - **Systems Development Concentration** This program is for those who plan to work in some areas of computer applications in the business field. Areas of study include data communications, database management, and systems analysis and design, with an emphasis on programming in several languages that are useful for business applications.
 - **Information Assurance and Security Concentration** This program prepares students to work in the information security and data protection areas. The program features student selectable emphasis areas in information security technical administration, information security management and secure software development.
- **B.S. in Computer Information Technology (BS CIT – declare using major code: cmit)**
 - **Database Administration Concentration** This program trains students in the design, implementation, and administration of databases, including those accessed by Web applications.
 - **Internet and Web Technology Concentration** This program trains students in the development and support of Internet applications. It emphasizes the construction of Web sites and the use of scripting languages.
 - **Networking Concentration** This program provides students with an in-depth understanding of the foundations of data communication and modern networking technology and develops the technical skills needed to deploy and manage an enterprise network in a secure computing environment.

Students need to complete the General Education Core requirements. Concentrations from B.S. CIS and B.S. CIT degrees require students to complete **a minor or a second concentration**. The Department of Computer Science and IT is in the Maynard Mathematics and Computer Science Building. There are currently over 600 majors in the department from which the department produces over 100 graduates each year. Transfer students and non-traditional students are welcome.

The Department also offers **five minors** in Computer Science, Computer Networking, Mobile Software Technology, Web Technology and Information Assurance & Security.

Advisors are available to assist prospective students in choosing a concentration and planning a program that will lead to graduation. Information on all the programs in the Department is available at the Department's Web site, www.apsu.edu/csci

For more information, contact

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B.S. in Computer Science
B.S. in Computer Information Systems
B.S. in Computer Information Technology

Graduation Checklist

- ___ Earn a minimum of 120 semester hours credit (overall GPA of 2.0 or better + APSU GPA of 2.0 or better).
- ___ Earn 33 semester credit hours of upper division courses (3000-4999 courses).
- ___ Earn $\geq 25\%$ of the degree requirements in residency; earn ≥ 24 semester credit hours in the junior or senior years.
- ___ Complete the General Education Core courses.
- ___ Complete APSU 1000 during 1st semester, if entering APSU with fewer than 12 university credits.
- ___ Complete the requirements for the chosen major and concentration (GPA of 2.0 or better).
- ___ Complete the requirements for the chosen minor or second concentration if applicable (GPA of 2.0 or better).
- ___ Complete the Major Field Test (if required) during the semester of graduation, and Senior Exit Exam (CCTST).

General Education Core

41 Credit Hours

Refer to the last two (2) pages of this documents for all general education core courses.

Concentration / Minor Chart

Our department offers eight (8) concentrations and five (5) minors.
Some concentration-minor restrictions apply.

x : cannot be chosen together to satisfy degree requirement

✓ : can be chosen together to satisfy degree requirement

		Minor				
		Computer Science	Computer Networking	Mobile Software	Web Technology	Info Assu & Security
Concentration	Comp Theory & Sys	x	✓	✓	✓	✓
	Intelligent Robotics	x	✓	✓	✓	✓
	Software Engineering	x	✓	✓	✓	✓
	Systems Development	x	✓	✓	x	✓
	Info Assu & Security	✓	✓	✓	✓	x
	Database Admin	✓	✓	✓	x	✓
	Internet & Web	✓	✓	✓	x	✓
	Network	✓	x	✓	✓	✓

Bachelor of Science Degree in **Computer Science**

A. General Education Core - Last 2 pages of this document	(41 Credit hours)
B. APSU 1000 - Transition to the University	(1 credit hour)
C. Major Requirements that Satisfy General Education Core	
MATH 1910 - Calculus and Analytic Geometry	4
D. Major Core Requirements	
D.1 Lower Division Courses	(17 to 18 hours)
CSCI 1010 - Introduction to Programming I and	3
CSCI 2010 - Introduction to Programming II or	3
CSCI 2000 - Programming and Data Structures using C++	4
CSCI 2070 - Programming in Selected Languages I or	3
CSCI 2080 - Programming Selected Languages II	3
MATH 1910 - Calculus and Analytic Geometry	4
MATH 1920 - Calculus and Analytical Geometry	4
D.2 Upper Division Courses	(19 hours)
CSCI 3250 - Data Structure and Algorithms	3
CSCI 3400 - Computer Organization I	3
CSCI 4100 - Operating Systems and Architecture	3
CSCI 4230 - Programming Languages	3
CSCI 4800 - Computer Science and Information Systems Seminar	1
CSCI 4805 - Computer Science Capstone or	3
CSCI 440I - Unrestricted Internship	3
MATH 3000 - Discrete Mathematics	3

E Select ONE (1) CONCENTRATION from the concentrations listed (E.1 or E.2 or E.3):

E.1 <u>Computer Theory and Systems Concentration</u>	(18 hours)
CSCI 3410 - Computer Organization II	3
CSCI 4270 - Algorithm Design and Analysis	3
MATH 3450 - Linear Algebra	3
Select one (1) course from the list below	
MATH 4670 - Numerical Analysis	3
STAT 3250 - Statistical Methods	3
STAT 4240 - Probability	3
Select two (2) courses from the list below	
CSCI 3090 - Introduction to Parallel Programming	3
CSCI 3500 - Theory of Automata, F. Lang. & Com.	3
CSCI 4350 - Compiler Design	3
CSCI 4450 - Introduction to Artificial Intelligence	3
CSCI 4550 - Computer Graphics	3
E.2 <u>Intelligent Robotics Concentration</u>	(18 hours)
CSCI 4270 - Algorithm Design and Analysis	3
CSCI 4450 - Introduction to Artificial Intelligence	3

CSCI 4560 - Robotics I	3
CSCI 4561 - Robotics II	3
MATH 3450 - Linear Algebra	3
STAT 3250 - Statistical Methods	3
or	
STAT 4240 - Probability	3

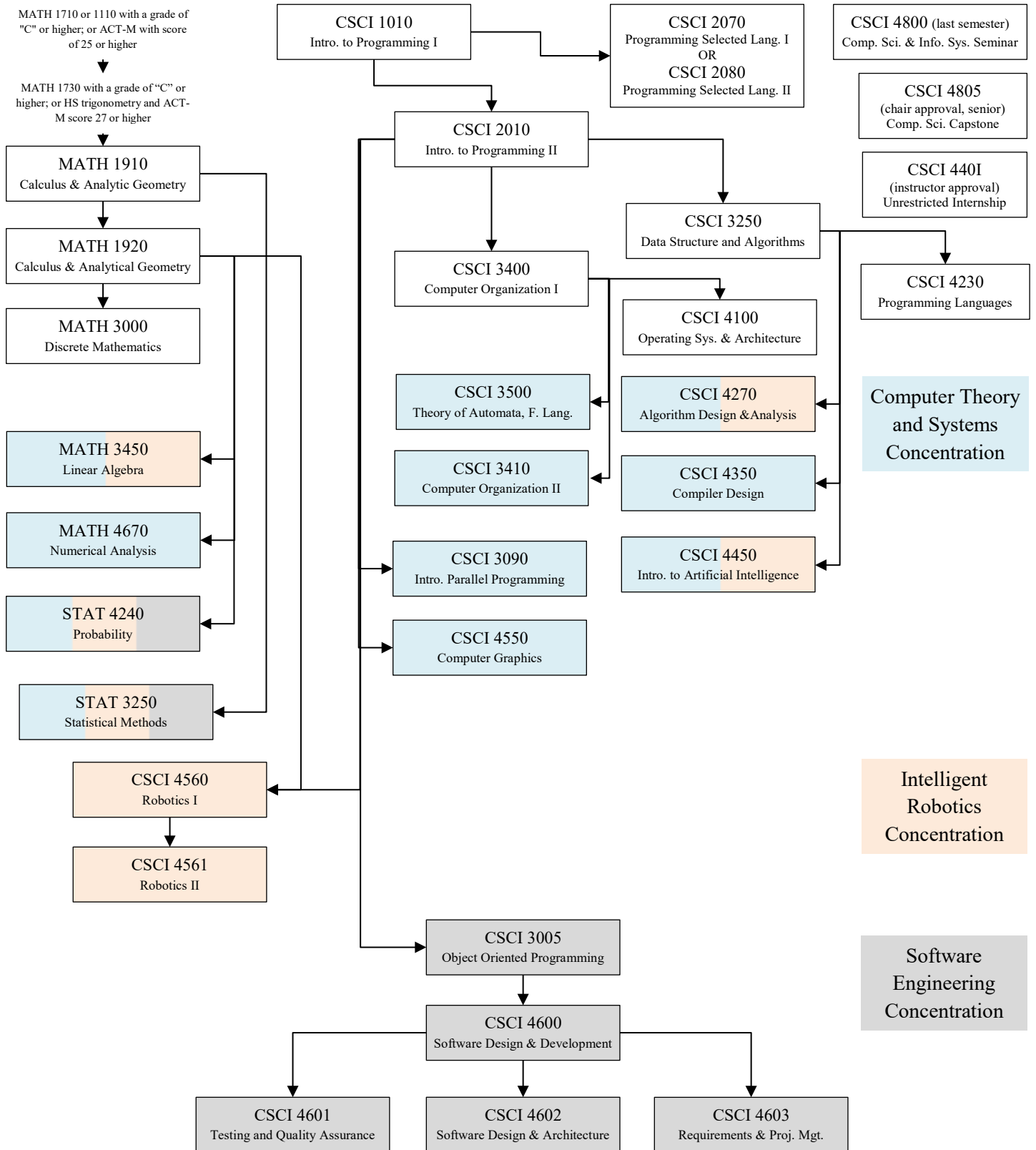
E.3 Software Engineering Concentration (18 hours)

CSCI 3005 - Object Oriented Programming	3
CSCI 4600 - Introduction to Software Engineering	3
CSCI 4601 - Testing and Quality Assurance	3
CSCI 4602 - Software Design and Architecture	3
CSCI 4603 - Requirements and Project Management	3
STAT 3250 - Statistical Methods	3
or	
STAT 4240 - Probability	3

F. General Electives (27 to 28 hours)

Can be fulfilled by a minor or another concentration.

B.S. in Computer Science Prerequisite Chart



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Bachelor of Science Degree in **Computer Information Systems**

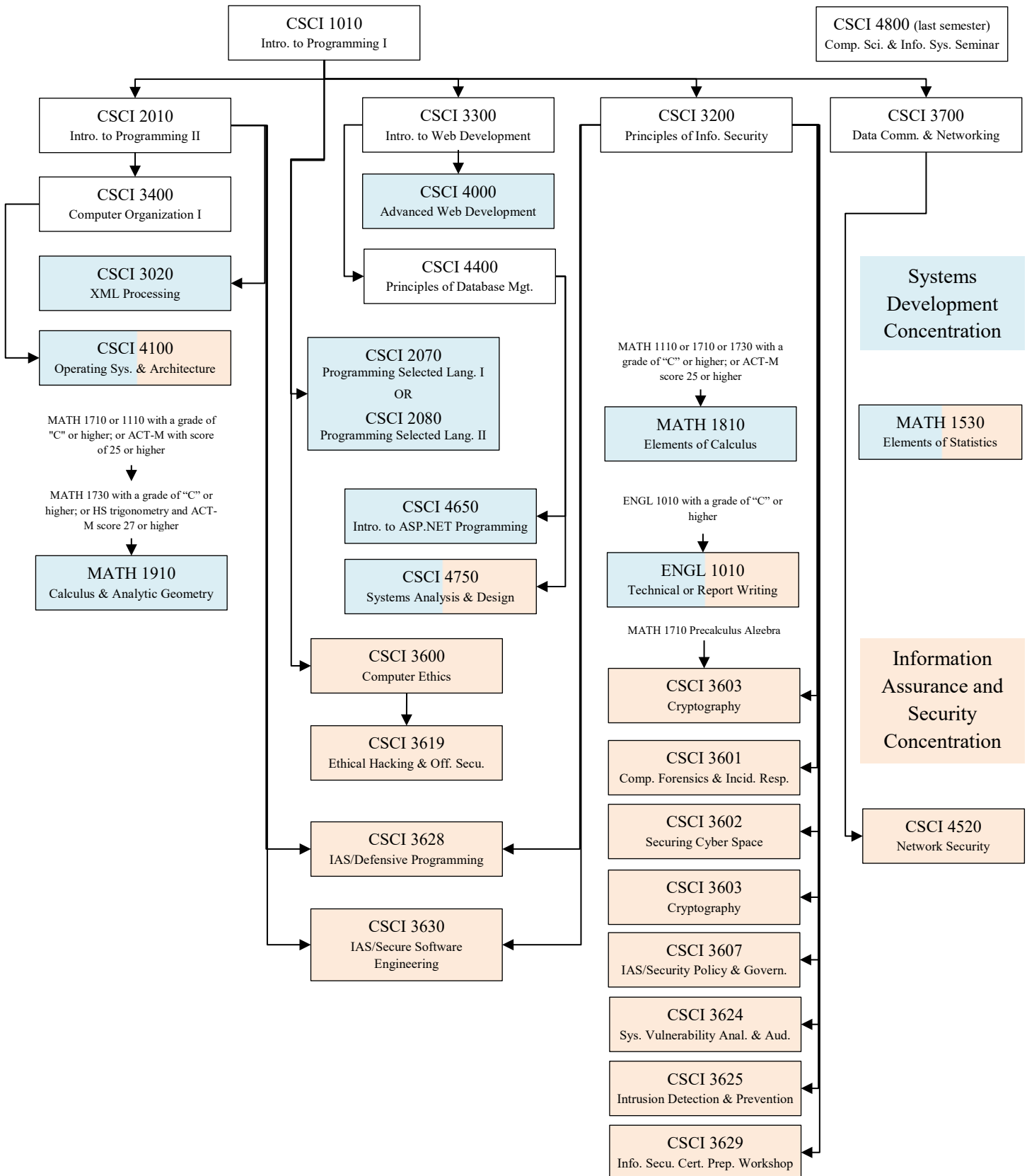
A. General Education Core - Last 2 pages of this document	(41 Credit hours)
B. APSU 1000 - Transition to the University	(1 credit hour)
C. Major Requirements that Satisfy General Education Core	
MATH 1530 - Elements of Statistics	3
D. Major Core Requirements	
D.1 Lower Division Courses	(4 to 6 hours)
CSCI 1010 - Introduction to Programming I	3
and	
CSCI 2010 - Introduction to Programming II	3
or	
CSCI 2000 - Programming and Data Structures using C++	4
D.2 Upper Division Courses	(16 hours)
CSCI 3200 - Principles of Information Security	3
CSCI 3300 - Introduction to Web Development	3
CSCI 3400 - Computer Organization I	3
CSCI 3700 - Data Communications and Networking	3
CSCI 4400 - Principles of Database Management	3
CSCI 4800 - Computer Science and Information Systems Seminar	1
E Select ONE (1) CONCENTRATION from the concentrations listed (E.1 or E.2):	
E.1 <u>Systems Development Concentration</u>	
Lower Division Courses	(12 to 13 hours)
CSCI 2070 - Programming in Selected Languages I	3
or	
CSCI 2080 - Programming Selected Languages II	3
ENGL 1100 - Technical and Report Writing	3
MATH 1530 - Elements of Statistics	3 (Gen Edn Core)
MATH 1810 - Elements of Calculus	3
or	
MATH 1910 - Calculus and Analytic Geometry	4
Upper Division Courses	(12 hours)
CSCI 3020 - XML Processing	3
CSCI 4000 - Advanced Web Development	3
or	
CSCI 4650 - Introduction to ASP.NET Programming	3
CSCI 4100 - Operating Systems and Architecture	3
CSCI 4750 - Systems Analysis and Design	3
E.2 <u>Information Assurance and Security Concentration</u>	
Lower Division Courses	(6 hours)
ENGL 1100 - Technical and Report Writing	3
MATH 1530 - Elements of Statistics	3 (Gen Edn Core)
Upper Division Courses	(19 hours)
CSCI 3600 - Computer Ethics	3
CSCI 3603 - Cryptography	3
CSCI 3629 - Information Security Certification Workshop	1
Select four (4) courses from the list below	

CSCI 3601 - Computer Forensics and Incident Response	3
CSCI 3602 - Securing Cyber Space (Web, DB, and Platform)	3
CSCI 3607 - IAS/Security Policy and Governance	3
CSCI 3619 - Ethical Hacking and Offensive Security	3
CSCI 3624 - System Vulnerability Analysis and Auditing	3
CSCI 3625 - Intrusion Detection and Prevention	3
CSCI 3628 - IAS/Defensive Programming	3
CSCI 3630 - IAS/Secure Software Engineering	3
CSCI 4100 - Operating Systems and Architecture	3
CSCI 4520 - Network Security	3
CSCI 4750 - Systems Analysis and Design	3

F. Minor or Second Concentration (18 hours)
Some restrictions on minor may apply.

G. General Electives (16 to 19 hours)
Can be fulfilled by a minor or another concentration.

B.S. in Computer Information Systems Prerequisite Chart



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Bachelor of Science Degree in **Computer Information Technology**

A. General Education Core - Last 2 pages of this document (41 Credit hours)

B. APSU 1000 - Transition to the University (1 credit hour)

C. Major Core Requirements

C.1 Lower Division Courses (6 hours)

CSCI 1005 - Computer Hardware, Software, and Programming Concepts 3
CSCI 1015 - Introduction to Computer Programming 3

C.2 Upper Division Courses (16 hours)

CSCI 3200 - Principles of Information Security 3
CSCI 3300 - Introduction to Web Development 3
CSCI 3700 - Data Communications and Networking 3
CSCI 4400 - Principles of Database Management 3
CSCI 4800 - Computer Science and Information Systems Seminar 1
CSCI 4940 - Internship in Information Technology 3

D Select ONE (1) CONCENTRATION from the concentrations listed (D.1 or D.2 or D.3):

D.1 Database Administration Concentration

Upper Division Courses (18 hours)

CSCI 3000 - Data Modeling 3
CSCI 4460 - Content Management Systems 3
CSCI 4650 - Introduction to ASP.NET Programming 3
CSCI 4750 - Systems Analysis and Design 3

Select two (2) courses from the list below

CSCI 4410 - Database Admin Using DB2 3
CSCI 4420 - Database Admin-MS SQL Server 3
CSCI 4430 - Database Admin Using Oracle 3
CSCI 4440 - Introduction to Open Source Databases 3

D.2 Internet and Web Technology Concentration

Upper Division Courses (21 hours)

CSCI 3350 - Web User Interface Design 3
CSCI 4000 - Advanced Web Development 3
CSCI 4050 - Multimedia Tools and Technique 3
CSCI 4460 - Content Management Systems 3
CSCI 4630 - Web Server Administrator 3
CSCI 4750 - Systems Analysis and Design 3
CSCI 4390 - Introduction to JAVA Server Pages 3

or

CSCI 4650 - Introduction to ASP.NET Programming 3

D.3 Networking Concentration

Upper Division Courses (18 hours)

CSCI 3760 - Linux Network Operating System Administration 3

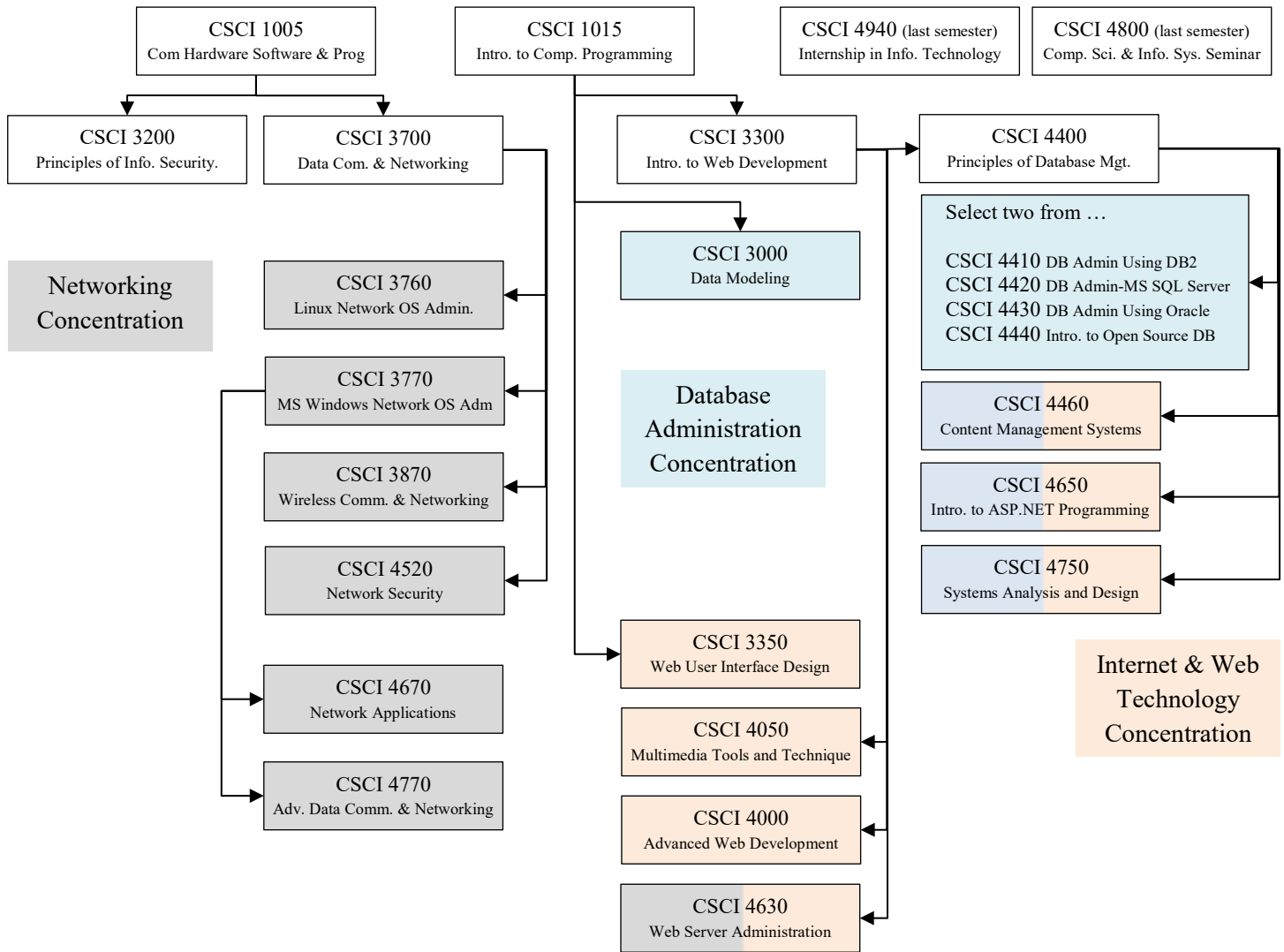
or

CSCI 3770 - Microsoft Windows Network Operating System Administration 3
CSCI 3870 - Wireless Communication and Networking 3
CSCI 4520 - Network Security 3
CSCI 4630 - Web Server Administrator 3
CSCI 4670 - Network Applications 3
CSCI 4770 - Advanced Data Communications and Networking 3

E. Minor or Second Concentration (18 hours)
Some restrictions on minor may apply.

F. General Electives (17 to 20 hours)
Can be fulfilled by a minor or another concentration.

B.S. in Computer Information Technology Prerequisite Chart



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Computer Networking Minor

Lower Division Courses	(3 hours)
CSCI 1005 - Computer Hardware, Software, and Programming Concepts	3
Upper Division Courses	(15 hours)
<u>CSCI 3700 - Data Communications and Networking</u>	<u>3</u>
CSCI 3760 - Linux Network Operating System Administration	3
or	
<u>CSCI 3770 - Microsoft Windows Network Operating System Administration</u>	<u>3</u>
CSCI 4520 - Network Security	3
Select two (2) courses from the list below	
CSCI 3870 - Wireless Communication and Networking	3
CSCI 4670 - Network Applications	3
CSCI 4770 - Advanced Data Communications and Networking	3

Computer Science Minor

Lower Division Courses	(10 to 13 hours)
CSCI 1010 - Introduction to Programming I	3
and	
CSCI 2010 - Introduction to Programming II	3
or	
<u>CSCI 2000 - Programming and Data Structures using C++</u>	<u>4</u>
CSCI 2070 - Programming in Selected Languages I	3
or	
<u>CSCI 2080 - Programming Selected Languages II</u>	<u>3</u>
Select one (1) of the math courses listed below	
MATH 1730 - Precalculus	4
MATH 1810 - Elements of Calculus	3
MATH 1910 - Calculus and Analytic Geometry	4
Upper Division Courses	(9 hours)
CSCI 3400 - Computer Organization I	3
Select six (6) credit hours of computer science courses listed below	
CSCI 3005 - Object Oriented Programming	3
CSCI 3250 - Data Structure and Algorithms	3
CSCI 3410 - Computer Organization II	3
CSCI 4010 - Mobile Software Development I	3
CSCI 4020 - Mobile Software Development II	3
CSCI 4230 - Programming Languages	3
CSCI 4270 - Algorithm Design and Analysis	3
CSCI 4350 - Compiler Design	3
CSCI 4450 - Introduction to Artificial Intelligence	3
CSCI 4550 - Computer Graphics	3
CSCI 4600 - Introduction to Software Engineering	3

Information Assurance and Security Minor

Lower Division Courses	(3 hours)
CSCI 1005 - Computer Hardware, Software, and Programming Concepts	3
or	
CSCI 1010 - Introduction to Programming I	3

Upper Division Courses	(21 hours)
CSCI 3200 - Principles of Information Security	3
CSCI 3600 - Computer Ethics	3
CSCI 3700 - Data Communications and Networking	3
CSCI 4520 - Network Security	3
Select three (3) courses from the list below	
CSCI 3601 - Computer Forensics and Incident Response	3
CSCI 3602 - Securing Cyber Space (Web, DB, and Platform)	3
CSCI 3603 - Cryptography	3
CSCI 3607 - IAS/Security Policy and Governance	3
CSCI 3619 - Ethical Hacking and Offensive Security	3
CSCI 3624 - System Vulnerability Analysis and Auditing	3
CSCI 3625 - Intrusion Detection and Prevention	3
CSCI 3628 - IAS/Defensive Programming	3
CSCI 3630 - IAS/Secure Software Engineering	3

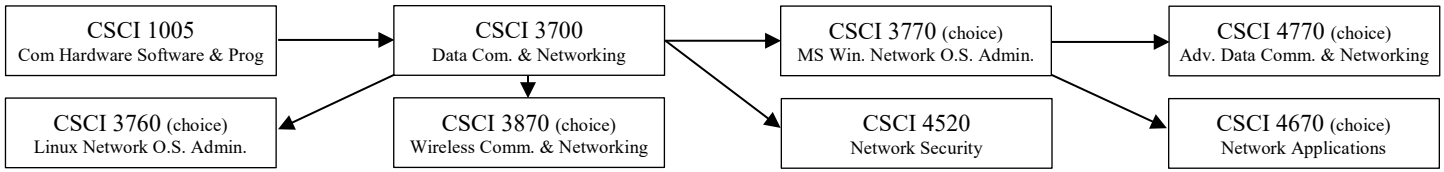
Mobile Software Technology Minor

Lower Division Courses	(6 to 7 hours)
CSCI 1010 - Introduction to Programming I	3
or	
CSCI 1015 - Introduction to Computer Programming	3
or	
CSCI 2000 - Programming and Data Structures using C++	4
CSCI 2070 - Programming in Selected Languages I	3
Upper Division Courses	(18 hours)
CSCI 3300 - Introduction to Web Development	3
CSCI 3350 - Web User Interface Design	3
CSCI 4000 - Advanced Web Development	3
or	
CSCI 4650 - Introduction to ASP.NET Programming	3
CSCI 4010 - Mobile Software Development I	3
CSCI 4020 - Mobile Software Development II	3
CSCI 4400 - Principles of Database Management	3

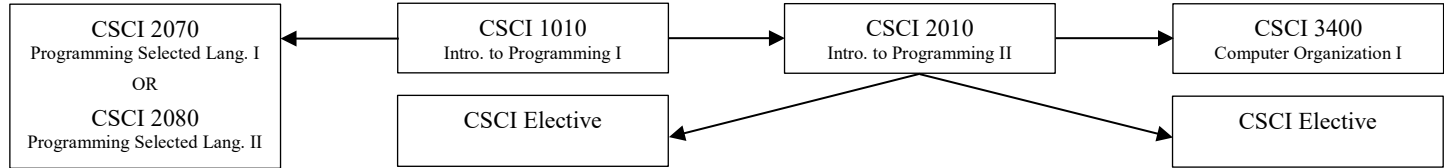
Web Technology Minor

Lower Division Courses	(6 hours)
CSCI 1005 - Computer Hardware, Software, and Programming Concepts	3
CSCI 1015 - Introduction to Computer Programming	3
Upper Division Courses	(15 hours)
CSCI 3300 - Introduction to Web Development	3
CSCI 3350 - Web User Interface Design	3
CSCI 4000 - Advanced Web Development	3
CSCI 4400 - Principles of Database Management	3
CSCI 4650 - Introduction to ASP.NET Programming	3

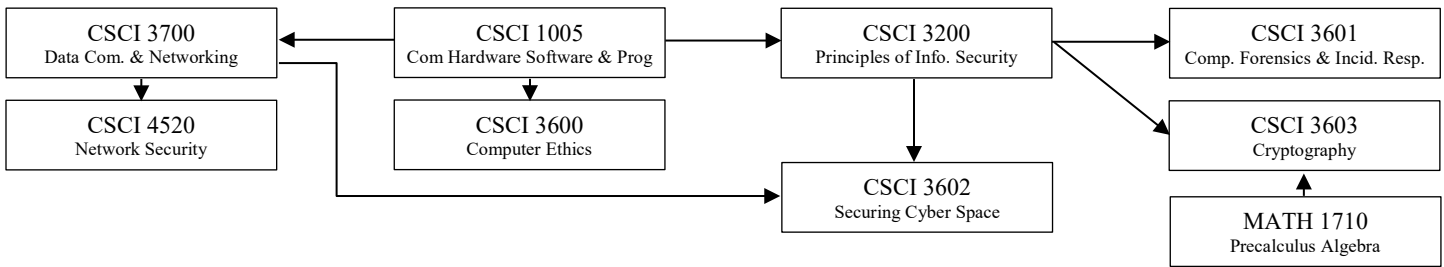
Computer Networking Minor Prerequisite Chart



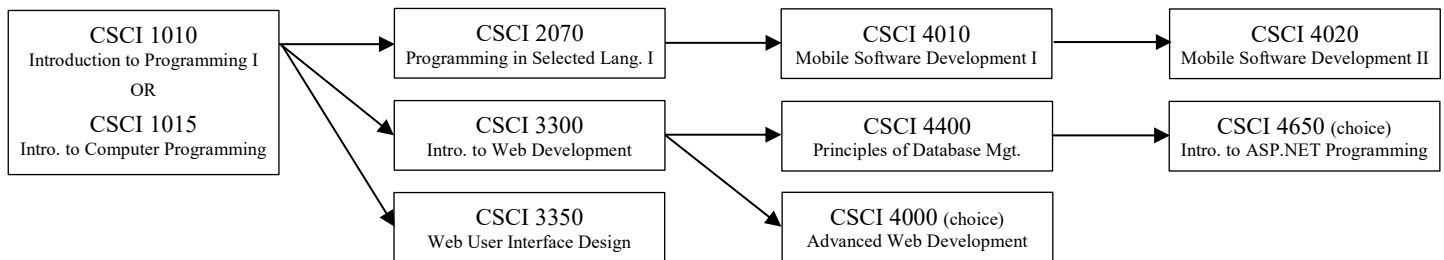
Computer Science Minor Prerequisite Chart



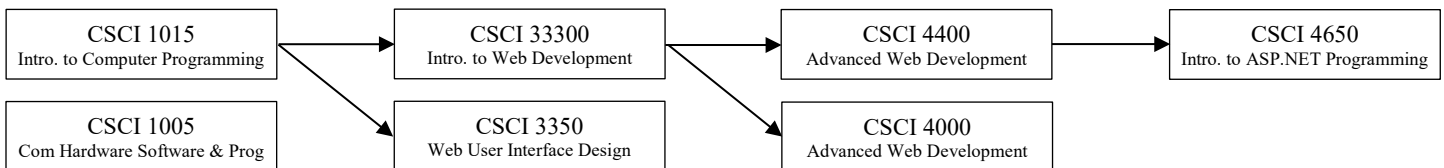
Information Assurance & Security Minor Prerequisite Chart



Mobile Software Technology Minor Prerequisite Chart



Web Technology Minor Prerequisite Chart



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General Education Core

41 Credit Hours**I. Communications (9 hours)**

ENGL 1010	- English Composition I	3
ENGL 1020	- English Composition II	3
COMM 2045	- Public Speaking	3 (previously COMM 1010)

II History (6 hours)**Complete two (2) courses from the list below**

HIST 2010	- Early United State History	3
HIST 2020	- Modern United States History	3
HIST 2030	- History of Tennessee	3
HIST 2310	- Early World History	3 (previously HIST 1210)
HIST 2320	- Modern World History	3 (previously HIST 1220)

III Humanities and/or Fine Arts (9 hours)

ENGL 2330	- Topics in World Literature	3 (previously ENGL 2030)
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Complete two (2) courses from different disciplines

ART 1035	- Introduction to Art	3 (previously ART 1030)
DANC 1200	- Introduction to Dance	3
MUS 1030	- Introduction to Music	3
MUS 2030	- World Music	3
MUS 2200	- Popular World Music	3
PHIL 1030	- Introduction to Philosophy	3
PHIL 1040	- Introduction to Ethics	3
PHIL 2200	- Religion and the World	3
THEA 1030	- Introduction to Theatre	3

IV Mathematics (3 hours)**Complete one (1) course from the list below**

MATH 1010	- Mathematical Thought and Practice	3
MATH 1110	- Algebraic Problem Solving	3
MATH 1420	- Structure of Mathematical Systems II	3
MATH 1530	- Elements of Statistics	3
MATH 1710	- Precalculus Algebra	3
MATH 1730	- Precalculus	4
MATH 1810	- Elements of Calculus	3
MATH 1910	- Calculus and Analytic Geometry	4

V Natural Sciences (8 hours)**Complete two (2) lecture/lab combinations from the list below**

ASTR 1010/1011	- Planetary Astronomy (and lab)	4
ASTR 1020/1021	- Stellar Astronomy (and lab)	4
BIOL 1010/1011	- Introduction to Biology (and lab)	4
BIOL 1020/1021	- Diversity of Life (and lab)	4
BIOL 1040/1041	- Human Biology (and lab)	4
BIOL 1110/1111	- General Biology I (and lab)	4
BIOL 1120/1121	- General Biology II (and lab)	4
BIOL 2010/2011	- Human Anatomy and Physiology I (and lab)	4
BIOL 2020/2021	- Human Anatomy and Physiology II (and lab)	4
BIOL 2400	- Sustaining Biodiversity	4

CHEM 1010/1011 - Introductory Chemistry I (and lab)	4
CHEM 1020/1021 - Introductory Chemistry II (and lab)	4
CHEM 1110/1111 - General Chemistry I (and lab)	4
CHEM 1120/1121 - General Chemistry II (and lab)	4
CHEM 1710/1711 - Introduction to Chemistry and Physics (and lab)	4
or	
PHYS 1710 - Introduction to Chemistry and Physics	4
GEOL 1040/1041 - Physical Geology (and lab)	4
GEOL 1050/1051 - Historical Geology (and lab)	4
PHYS 1010/1011 - Understanding Physical World (and lab)	4
PHYS 1020/1021 - Understanding Physical World (and lab)	4
PHYS 2010/2011 - College Physics I (and lab)	4 (Algebra/Trigonometry-based)
PHYS 2020/2021 - College Physics II (and lab)	4 (Algebra/Trigonometry-based)
PHYS 2110/2111 - University Physics I (and lab)	4 (Calculus-based)
PHYS 2120/2121 - University Physics II (and lab)	4 (Calculus-based)

VI Social and Behavioral Sciences (6 hours)

Complete two (2) courses from different disciplines from the list below

AAST 2200 - Introduction African American Studies	3
COMM 1110 - Media and Social Institutions	3
ECON 2100 - Principles of Macroeconomics	3
GEOG 1015 - Physical Geography	3 (previously GEOG 1010)
GEOG 1035 - World Regional Geography I	3 (previously GEOG 1020)
GEOG 1045 - World Regional Geography 2	3 (previously GEOG 1030)
HHP 1250 - Wellness Concepts and Practice	3
LDSP 2100 - Foundations of Leadership	3
POLS 2000 - Introduction to Politics	3
POLS 2010 - American National Government	3
POLS 2040 - Introduction to Public Policy	3
POLS 2070 - International Politics	3
PSY 1030 - Introduction to Psychology	3
PSY 1050 - Psychology of Modern Culture	3
SOC 1010 - Introduction to Sociology	3 (previously SOC 2010)
SOC 1040 - Social Problems	3
SOC 2900 - Marriage and the Family	3
WGS 2050 - Women and Culture: Introduction to Women's and Gender Studies	3