EECS Undergraduate Handbook

Computer Science and Computer Engineering Curriculum

2024-2025

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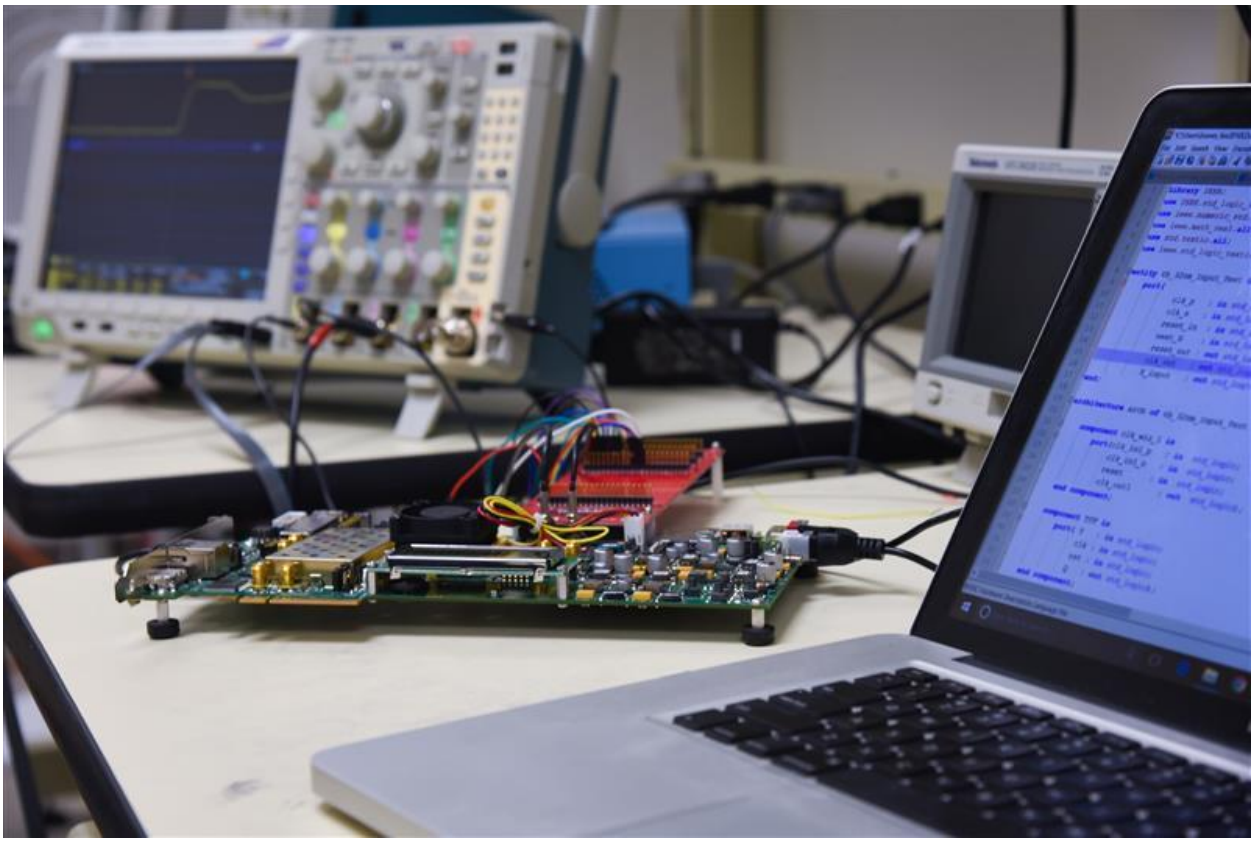

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EECS Department Information

EECS Majors

The department offers the following undergraduate degrees:

- Bachelor of Science in Computer Engineering
- Bachelor of Science in Computer Engineering with Cybersecurity Concentration
- Bachelor of Science in Computer Science
- Bachelor of Science in Computer Science with Cybersecurity Concentration
- Bachelor of Science in Electrical Engineering (covered in a separate handbook)
- Bachelor of Arts in Computer Science

Bachelor of Science in Computer Engineering

Computer Engineers engage in the design of embedded systems such as cell phones, avionics, communications networks, and digital radios, through Internet computing systems such as set top gaming boxes, and to more general-purpose systems such as desktop and laptop computers, and next generation supercomputers. The Bachelor of Science in Computer Engineering provides a solid foundation in topics across the hardware-software boundary ranging from physical component structures to operating systems and programming languages to provide students with the ability to integrate physical and abstract components into working systems. Computer Engineering graduates find employment nationally with companies in hardware design, communications, and defense.

The B.S. in Computer Engineering Program is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org.

Bachelor of Science in Computer Engineering with Cybersecurity Concentration

The requirements for the B.S. in Computer Engineering with Cybersecurity Concentration include completing the B.S. in Computer Engineering degree requirements and three courses (9 credit hours) from the list of CSCE Cybersecurity Electives below.

- CSCE 44303 Cryptography
- CSCE 47503 Computer Networks
- CSCE 47803 Cloud Computing and Security
- CSCE 48503 Information Security

Note: These three classes can be counted as CSCE 40000-Level Electives or General Electives in the B.S. in Computer Engineering degree requirements.

Bachelor of Science in Computer Science

Computer Scientists seek approaches and methods to efficiently automate everyday jobs, create and interpret new information, and seek new applications for technology to enhance the human experience. The Bachelor of Science in Computer Science prepares students through a solid core of study in the theoretical foundations of information and computation, as well as the practical techniques in the areas of programming languages, software engineering, databases, operating systems, cybersecurity, and artificial intelligence for implementing software applications. The Computer Science degree provides the flexibility to allow students to combine their skills with a wide variety of interdisciplinary interests in other fields, such as computational biology, chemistry, and art. Computer Science graduates find employment with national companies in healthcare, e-commerce, energy, logistics, and retail.

The B.S. in Computer Science Program is accredited by the Computing Accreditation Commission of ABET, https://www.abet.org.

Bachelor of Science in Computer Science with Cybersecurity Concentration

Requirements for the B.S. in Computer Science with Cybersecurity Concentration include completing the B.S. in Computer Science degree requirements and three courses (9 credit hours) from the list of CSCE Cybersecurity Electives below.

- CSCE 44303 Cryptography
- CSCE 47803 Cloud Computing and Security
- CSCE 48503 Information Security

Note: These three classes can be counted as CSCE 40000-Level Electives or General Electives in the B.S. in Computer Science degree requirements.

Bachelor of Arts in Computer Science

The Bachelor of Arts in Computer Science combines a solid core of Computer Science courses with the ability to gain knowledge in other subjects. In addition, there are numerous choices in the curriculum for science and humanities courses. Since computing is a discipline with strong links to many fields, this provides students with unparalleled flexibility to pursue other interests.

General Information

EECS Honors Program

The Honors program provides a structure for working more closely with faculty members and other students in a team environment. Participation in the Engineering Honors Program is highly recommended for individuals planning academic or research-related careers that require considerable critical and original independent thinking, but it is also quite useful for students wishing to explore career potential in a number of areas.

Admission requirements:

- Current students must have at least a 3.50 cumulative GPA at the University of Arkansas to be eligible.
- Entering first-year students who are eligible are admitted during the orientation process.
    - Must have a 3.75 high school GPA.
    - Extra weight is given for Advanced Placement, International Baccalaureate, and Dual Enrollment courses in calculating GPA, provided these courses are clearly indicated as such on the official high school transcript.
    - 28 ACT or 1310 SAT.
    - Honors admission is based on your highest composite ACT or SAT score, not on superscores.
- Entering transfer students must have a 3.50 GPA on their transfer work.
- New students not initially qualifying for the Engineering Honors Program are eligible after one term if they earn at least a 3.50 cumulative GPA.

Application for the Honors Program must be made through the College of Engineering Office of Student Records in Bell Engineering 3189.

The department considers the following requirements necessary to graduate with honors:

- The candidate must satisfy the requirements set forth by the College of Engineering.
- A student must obtain at least a 3.50 grade-point average in required Computer Engineering and/or Computer Science classes.
- Must successfully complete a minimum of 12 hours of honors courses and an undergraduate research experience and thesis.
    - At least 6 of the honors credit hours must be in the major, which includes 3 hours of Honors thesis taken as successive semesters of CSCE 491HV and 3 hours of non-thesis coursework (courses with honors designation or 50000-level).

Guidelines for completion of the honors program and required forms for submission of thesis and verification for degree completion can be found on the College of Engineering website.

AP Credit and Exemptions

Students who have taken the AP Computer Science A exam and received a score of 3 or above will receive credit for CSCE 20004 Programming Foundations I.

Credit by exam for CSCE 20004 is available to students who have a strong programming background that includes all the content taught in CSCE 20004. Typically, this background is obtained by taking other programming classes, or through work experience. Credit by exam is not intended as a method for students to teach themselves programming and avoid taking CSCE 20004. If you do not already have significant programming experience, you should take the course. Credit by exam is not permitted for students who have already taken CSCE 20004 and scored a D or F in the course. Only one attempt to test out will be allowed. Email your name and student ID to eecs@uark.edu to seek permission for credit by exam. The department will review these requests on a case-by-case basis.

You can reference the web link below to learn more about the University's general guidelines regarding possible honors credit according to your AP scores.

https://catalog.uark.edu/undergraduatecatalog/academicregulations/advancedstandingprograms/#advancedplacementtext

Note: *Students who receive exemptions for ENGL 10103 and/or ENGL 10203 will not be required to take those courses but will have to take courses to replace the hour requirements. They should discuss this with their faculty advisor.*

First-Year Engineering

The First-Year Engineering Program was developed to help incoming freshmen decide on engineering majors, develop and practice good study habits and, in general, prepare the incoming students for the rigors of college and the university program. All freshmen entering the College of Engineering must enroll in the First-Year Engineering Program.

Transfer Students

Transfer students may be directed to the First-Year Engineering Program (FEP) if participation in the program would enhance progress towards their degree. This may occur if the student does not have credit for MATH 24004 Calculus I. If the transfer student enters the EECS department directly, the two courses that are required for FEP (GNEG 11101 and GNEG 11201) would be replaced with two hours of STEM electives.

Changing Majors

Students wanting to switch from CS to CE or CE to CS should discuss this first with their faculty advisor. The first two semesters of study are identical, so the transfer at that point is easy. There are minor differences in the third and fourth semester that still allow for change. After the fifth and sixth semester there are differences that might create some issues (such as having to take more coursework).

Completion of the forms to process the change of major should be done in the College of Engineering Office of Student Records in Bell Engineering 3189, or email engr-rec@uark.edu from your University of Arkansas email account with your name, student ID number, and your request. When you switch majors, you will be changed to the most recent version of the catalog.

Minors

Computer Science Minor requirements

A grade of C or better in the following courses:

CSCE 20004 Programming Foundations I
CSCE 20104 Programming Foundations II
CSCE 31903 Programming Paradigms
Three additional CSCE courses at the 20000-level or higher (9 hours)

Total Hours 20

Math Minor requirements

A grade of C or better in the following courses:

MATH 24004 Calculus II
MATH 26103 Discrete Mathematics
or MATH 28003 Transition to Advanced Mathematics
or MATH 35803 Foundations of Applied Mathematics
or MATH 44203 Introduction to Partial Differential Equations
3 courses selected from the following:
MATH 26004 Calculus III
MATH 25804 Elementary Differential Equations
STAT 30133 Introduction to Probability
Any MATH courses at the 30000-level or higher

Declaring a Minor

Students in the College of Engineering may pursue an academic minor in other colleges. For requirements regarding minors, check the catalog listing for the department offering the minor. To declare a minor in any program, go to the College of Engineering Office of Student Records in Bell Engineering 3189 to complete the paperwork, or email engr-

rec@uark.edu from your University of Arkansas email account with your name, student ID number, and your request.

Additional Bachelor's Degree

A student seeking two or more undergraduate degrees from the University of Arkansas must meet the graduation requirements for each degree, including all university, college or school, and departmental requirements as stated in the catalog. When two or more undergraduate degrees are being completed concurrently, or while being continuously enrolled at the University of Arkansas, course work for the first degree may be used to satisfy requirements for the second degree. Students must apply to graduate individually for each degree. A student earning two or more bachelor's degrees in a single academic year will have their name appear only once on Senior Walk.

A student who previously completed a bachelor's degree from the University of Arkansas, or from any other institution, must complete at least 30 hours of additional, not necessarily subsequent, course work in residence from the University of Arkansas. More than 30 hours of course work may be required to satisfy all university, college or school, and departmental requirements.

Accelerated M.S. Degree

High-achieving undergraduate students in either the Computer Engineering or Computer Science B.S. program at the University of Arkansas who choose to pursue graduate studies in our department may participate in the accelerated MS program. Eligible students must have a GPA of 3.5.

These students can take up to 6 credit hours of 50000-level CSCE courses as CSCE electives for their bachelor's degree and count those hours towards their graduate degree, should they choose to pursue one in our department. **The 6 hours must be taken within the final 12 months before receiving the undergraduate degree.**

Students must get permission from the instructor to take a graduate class. Contact the department at eecs.uark.edu for the form. If the student returns to the graduate program at University of Arkansas, then they can submit a form to retroactively count the coursework.

Academic Advising

Students are assigned an EECS faculty advisor for their final two years of enrollment in a EECS degree program. Typically, this advisor will remain with the student throughout the remainder of their academic career. Students can find the name of their faculty advisor in the UAConnect system in their student account.

How Advising Works

Advance registrations are held in the fall and spring semesters, allowing a currently enrolled student to register for classes prior to new students entering the university. Students are strongly encouraged to register during these periods because certain classes tend to fill up quickly and seating may be limited, or low enrollments could mean that classes get cancelled.

Students must see their advisor prior to any registration period to review the degree progress, course plans, answer questions, and get assistance with academic problems. Advising periods are scheduled two to three weeks before Advance Registration begins.

How to Get Advised

Step 1: Students have access to degree audits in UAConnect through their student account. Students should review the degree audit and plan their schedule before meeting with their faculty advisor.

Step 2: Students should schedule an appointment with their faculty advisor during their advertised times. Advisors will contact advisees about appointment periods. The advisor will review the course plan and verify that prerequisites have been met. The faculty advisor will remove the advising hold at the end of the appointment.

This is also a good opportunity to talk about career plans, co-ops, and other academic issues.

Degree Program Changes

Students must meet all requirements of their degree program and are expected to keep informed concerning current regulations, policies, and program requirements in their field of study. It is the responsibility of the student to ensure all degree requirements are met before graduation.

Changes made in curriculum at a level beyond that at which a student is enrolled **might become graduation requirements**. Changes made in the curriculum at a lower level than the one at which a student is enrolled are not required for that student. Students should consult their faculty advisor for additional information.

Students reinstated after a period of absence without continuous enrollment must meet the curriculum requirements of the catalog in effect at the time of reinstatement.

Degree Audits

The University has developed an automated degree audit system for students and advisors to view progress towards the degree requirements. This degree audit system is available through UAConnect in the Student Center. A detailed description of the degree audit

system can be found at https://help-uaconnect.uark.edu/_resources/documents/degreeaudit-student.pdf

A comprehensive degree audit review should be scheduled prior to registering for the first semester of the senior year with your advisor. If a student and/or their advisor have questions about any entries on the degree audit, please contact eecs@uark.edu with any questions or concerns.

Graduation Requirements

In addition to the specific departmental requirements for degree plans, students should refer to the Academic Regulations section of the Catalog of Studies for general university requirements.

The College of Engineering has these additional requirements:

1. **Grade-Point Average** – A candidate for a degree from the College of Engineering must have earned a grade-point average of no less than 2.00 on all courses in the student's major area of study.
2. **Courses That Do Not Count Toward a Degree** – The following courses, which may be required as prerequisites to other classes, do not count toward degree credit for Bachelor of Science or Bachelor of Arts degrees in the College of Engineering: MATH 11003, MATH 1204, MATH 12003, MATH 13004, GNEG 1514, and GNEG 1515 or their equivalents. Other courses that cover remedial math topics will not count toward the degree either.
3. **"D" Rule** – No student will be allowed to graduate if the student has "D" or "PD" grades in more than 8 hours presented to meet the requirements for a degree.
4. **Transfer of Courses** – Advanced (30000- and 40000-level at the University of Arkansas) engineering courses may not normally be transferred from institutions that do not have programs accredited by the Engineering Accreditation Commission.
5. **Resident Requirements** – A candidate must earn a minimum of 20 credit hours at the 30000-level and above in the College of Engineering from the University of Arkansas.

Application for Graduation

Students who plan to graduate must file an official application to do so. Applications should be filed for the term in which degree requirements will be completed. A graduation fee will be required at the time of application.

To ensure that students will be certified for graduation in a timely manner, the following graduation application deadlines have been established:

Date	Description
October 1	for students graduating in fall
March 1	for students graduating in spring
July 1	for students graduating in summer

Students must apply by the established deadline for that term. A student who fails to complete the degree during the intended semester must contact the Office of the Registrar to renew the application for the term in which the degree requirements will be completed.

Computer Science and Computer Engineering Curriculum

CSCE Electives

The B.S. degree in Computer Engineering requires **four** CSCE Electives, while the B.S. degree in Computer Science requires **three** CSCE Electives. Both degrees require the electives be chosen from any CSCE 40000-level or higher course not required for the degree **except for CSCE 4900V Individual Study**. B.A. in Computer Science students can choose from any CSCE 30000-level or higher course not required for the degree **with the exception of CSCE 4900V.**

B.S. in Computer Engineering – may take ***one*** STEM elective from the following list for a CSCE Elective:

STEM Elective
MATH 42503/PHIL 42503 Symbolic Logic I
MATH 43503 Numerical Linear Algebra
MATH 43603 Numerical Analysis
ELEG 39204 Microprocessor Systems Design

B.S. in Computer Science – may take ***one*** of the STEM electives listed above **OR** ***one*** of the Professional electives listed below for a CSCE Elective:

Professional Elective
SEVI 39303 Entrepreneurship and New Venture Development
SEVI 44303 Small Enterprise Management
SEVI 49903 Entrepreneurship Practicum
MGMT 42503 Leadership

Common Course Substitutions

- STAT 30133 Introduction to Probability and STAT 31133 Introduction to Mathematical Statistics, together, is a valid substitution for INEG 33103 Engineering Probability and Statistics.

- MATH 28003 Transition to Advanced Mathematics is a valid substitution for MATH 26103 Discrete Mathematics.
- MATH 30903 Abstract Linear Algebra is a valid substitution for MATH 30803 Linear Algebra.

Petitions

If a student wishes to take a STEM elective not on the approved list or deviate from the published program in any way, the student must petition the Undergraduate Studies Committee for approval prior to enrolling in the class. The petition form must be submitted electronically with supporting documents to eecs@uark.edu.

Eight Semester Degree Plans

Computer Engineering 8 Semester Plan – Fall 2024

Fall Semester Year 1 1 GNEG 11101 Introduction to Engineering I 4 MATH 24004 Calculus I (Satisfies General Education Outcome 2.1)[1] 3 CHEM 14103 University Chemistry I 3 ENGL 10103 Composition I (Satisfies General Education Outcome 1.1) 3 History Elective (Satisfies General Education Outcomes 3.2 and 4.2) Choose from one of the following courses: HIST 20003 or HIST 20103 **14 Semester hours**	**Spring Semester Year 1** 1 GNEG 11201 Intro to Engineering II 4 MATH 25004 Calculus II 4 PHYS 20304 University Physics I (Satisfies General Education Outcome 3.4) 4 Freshman Science Elective with lab (Satisfies General Education Outcome 3.4)[5] Choose one of the following options: BIOL 10103/10101 Principles of Biology, CHEM 14203/14201 University Chemistry II, GEOS 11103/11101 Physical Geology 3 ENGL 10303 Technical Composition II (Satisfies General Education Outcome 1.2) **16 Semester hours**
Fall Semester Year 2 4 CSCE 20004 Programming Foundations I 4 CSCE 21104 Digital Design 4 MATH 26004 Calculus III 4 PHYS 20404 University Physics II (Satisfies General Education Outcome 3.4) **16 Semester hours**	**Spring Semester Year 2** 4 CSCE 20104 Programming Foundations II 4 CSCE 22104 Computer Organization 4 MATH 25804 Elementary Differential Equations 3 MATH 26103 Discrete Mathematics 3 Social Sciences Elective (Satisfies General Education Outcomes 3.3 and 4.1)[2] **18 Semester hours**
Fall Semester Year 3 3 CSCE 31903 Programming Paradigms 3 CSCE 36103 Operating Systems 3 CSCE 39503 System Synthesis and Modeling 3 Social Sciences Elective (Satisfies General Education Outcome 3.3)[3] 3 INEG 33103 Engineering Probability and Statistics[4] **15 Semester hours**	**Spring Semester Year 3** 3 CSCE 35103 Software Engineering (Satisfies General Education Outcome 6.1) 3 CSCE Elective (40000-level) 3 ELEG 39903 Circuits & Electronics 3 PHIL 31003 Ethics and the Professions (Satisfies General Education Outcome 5.1) 3 SPCH 10003 Public Speaking (Satisfies General Education Outcome 1.2) **15 Semester hours**
Fall Semester Year 4 1 CSCE 45601 Capstone I 4 CSCE 41104 Embedded Systems 3 CSCE Elective (40000-level) 3 CSCE Elective (40000-level) 3 Fine Arts Elective (Satisfies General Education Outcome 3.1)[6] 3 General Elective **17 Semester hours**	**Spring Semester Year 4** 3 CSCE 42103 Computer Architecture 3 CSCE 49603 Capstone II 3 CSCE Elective (40000-level) 3 Social Sciences Elective (Satisfies General Education Outcome 3.3)[3] 3 General Elective **15 Semester hours**

126 Total hours

[1]Students have demonstrated successful completion of the learning indicators identified for learning outcome 2.1 by meeting the prerequisites for MATH 24004

[2]The Social Sciences Elective courses which satisfy General Education Outcomes 3.3 and 4.1 include: ANTH 10203, COMM 10203, HDFS 14003, HDFS 24103, HIST 11193, HIST 111H3, HIST 11293, HIST 112H3, HIST 20903, HUMN 111H4, HUMN 211H4, INST 28103, INST 281H3, PLSC 20103, PLSC 28103, PLSC 281H3, RESM 28503, RESM 285H3, SOCI 10103, SOCI 101H3, or SOCI 20103.

[3]The Social Sciences Elective courses which satisfy General Education Outcome 3.3 include: AGEC 11003, AGEC 21003, ANTH 10203, COMM 10203, ECON 21003, ECON 22003, ECON 21403, EDST 20003, HDFS 14003, HDFS 24103, HDFS 26003, HIST 11193, HIST 111H3, HIST 11293, HIST 112H3, HIST 20003, HIST 20103, HIST 20903, HUMN 111H4, HUMN 211H4, INST 28103, INST 281H3, PLSC 20003, PLSC 20103, PLSC 21003, PLSC 28103, PLSC 281H3, PSYC 20003, RESM 28503, SOCI 10103, SOCI 101H3, SOCI 20103. Note, courses cannot be counted twice in degree requirements.

[4]Student may petition to take the two-course sequence, STAT 30133 and STAT 31133, instead of INEG 33103.

[5]Student must take lab.

[6]The Fine Arts Elective courses which satisfy General Education Outcome 3.1 include: ARCH 10003, ARHS 10003, COMM 10003, DANC 10003, LARC 10003, MUSC 10003, MUSC 100H3, MUSC 10103, MUSC 101H3, MUSC 13303, THTR 10003, THTR 10103, or THTR 101H3.

Computer Science B.S. 8 Semester Plan – Fall 2024

Fall Semester Year 1 1 GNEG 11101 Introduction to Engineering I 3 ENGL 10103 Composition I (Satisfies General Education Outcome 1.1) 3 CHEM 14103 University Chemistry I 4 MATH 24004 Calculus I (Satisfies General Education Outcome 2.1)[1] 3 History Elective (Satisfies General Education Outcomes 3.2 and 4.2). Choose from one of the following courses: HIST 20003 or HIST 20103. **14 Semester hours**	**Spring Semester Year 1** 1 GNEG 11201 Intro to Engineering II 4 MATH 25004 Calculus II 4 PHYS 20304 University Physics I (Satisfies General Education Outcome 3.4) 4 Freshman Science Elective (Satisfies General Education Outcome 3.4) Choose one of the following options: BIOL 10103/10101 Principles of Biology, CHEM 14203/14201 University Chemistry II, GEOS 11103/11101 Physical Geology, PHYS 20404 University Physics II (must have credit for PHYS 20304) 3 ENGL 10303 Technical Composition II (Satisfies General Education Outcome 1.2) **16 Semester hours**
Fall Semester Year 2 4 CSCE 20004 Programming Foundations I 4 CSCE 21104 Digital Design 3 MATH 26103 Discrete Mathematics 3 Fine Arts Elective (Satisfies General Education Outcome 3.1)[2] 3 Social Sciences Elective (Satisfies General Education Outcomes 3.3 and 4.1)[3] **17 Semester hours**	**Spring Semester Year 2** 4 CSCE 20104 Programming Foundations II 4 CSCE 22104 Computer Organization 3 MATH 30803 Linear Algebra 3 Social Sciences Elective (Satisfies General Education Outcome 3.3)[4] **14 Semester hours[5]**
Fall Semester Year 3 3 CSCE 31903 Programming Paradigms 3 CSCE 36103 Operating Systems 3 INEG 33103 Engineering Probability and Statistics[5] 3 PHIL 31003 Ethics and the Professions (Satisfies General Education Outcome 5.1) 3 General Elective **15 Semester hours**	**Spring Semester Year 3** 3 CSCE 35103 Software Engineering (Satisfies General Education Outcome 6.1) 3 CSCE 45203 Database Management Systems 3 CSCE Elective (40000-level) 3 MATH 31003 Combinatorics 3 SPCH 10003 Public Speaking (Satisfies General Education Outcome 1.2) **15 Semester hours**
Fall Semester Year 4 1 CSCE 45601 Capstone I 3 CSCE 41303 Algorithms 3 CSCE 47503 Computer Networks 3 CSCE Elective (40000-level) 3 General Elective 3 General Elective **16 Semester hours**	**Spring Semester Year 4** 3 CSCE 49603 Capstone II 3 CSCE 43203 Formal Languages and Computability 3 CSCE Elective (40000-level) 3 General Elective 3 Social Sciences Elective (Satisfies General Education Outcome 3.3)[4] **15 Semester hours**

122 Total hours

[1]Students have demonstrated successful completion of the learning indicators identified for learning outcome 2.1, by meeting the prerequisites for MATH 24004.

[2]The Fine Arts Elective courses which satisfy General Education Outcome 3.1 include: ARCH 10003, ARHS 10003, COMM 10003, DANC 10003, LARC 10003, MUSC 10003, MUSC 100H3, MUSC 10103, MUSC 101H3, MUSC 13303, THTR 10003, THTR 10103, or THTR 101H3.

[3]The Social Sciences Elective courses which satisfy General Education Outcomes 3.3 and 4.1 include: ANTH 10203, COMM 10203, HDFS 14003, HDFS 24103, HIST 11193, HIST 111H3, HIST 11293, HIST 112H3, HIST 20903, HUMN 111H4, HUMN 211H4, INST 28103, INST 281H3, PLSC 20103, PLSC 28103, PLSC 281H3, RESM 28503, SOCI 10103, SOCI 101H3, or SOCI 20103.

[4]The Social Sciences Elective courses which satisfy General Education Outcome 3.3 include: AGEC 11003, AGEC 21003, ANTH 10203, COMM 10203, ECON 21003, ECON 22003, ECON 21403, EDST 20003, HDFS 14003, HDFS 24103, HDFS 26003, HIST 11193, HIST 111H3, HIST 11293, HIST 112H3, HIST 20003, HIST 20103, HIST 20903, HUMN 111H4, HUMN 211H4, INST 28103, INST 281H3, PLSC 20003, PLSC 20103, PLSC 21003, PLSC 28103, PLSC 281H3, PSYC 20003, RESM 28503, SOCI 10103, SOCI 101H3, SOCI 20103. Note, courses cannot be counted twice in degree requirements.

[5]Student may petition to take the two-course sequence, STAT 30133 and STAT 31133, instead of INEG 33103.

Computer Science B.A. 8 Semester Plan – Fall 2024

Fall Semester Year 1 3 ENGL 10103 Composition I (Satisfies General Education Outcome 1.1) 4 MATH 24004 Calculus I (Satisfies General Education Outcome 2.1)[1] 3 Social Sciences Elective (Satisfies General Education Outcomes 3.3 and 4.1)[2] 3 History Elective (Satisfies General Education Outcomes 3.2 and 4.2). Choose from one of the following courses: HIST 20003 or HIST 20103 **13 Semester hours[6]**	**Spring Semester Year 1** 4 CSCE 20004 Programming Foundations I 4 CSCE 21104 Digital Design 3 ENGL 10203 Composition II (Satisfies General Education Outcome 1.1) or ENGL 10303 Technical Composition II 3 MATH 26103 Discrete Mathematics **14 Semester hours[6]**
Fall Semester Year 2 4 CSCE 20104 Programming Foundations II 4 CSCE 22104 Computer Organization 3 Fine Arts Elective (Satisfies General Education Outcome 3.1)[3] 3 Social Sciences Elective (Satisfies General Education Outcome 3.3)[4] 3 General Elective **17 Semester hours**	**Spring Semester Year 2** 3 CSCE 31903 Programming Paradigms 3 SPCH 10003 Public Speaking (Satisfies General Education Outcomes 1.2 and 5.1) 3 MATH 21003 Principles of Statistics 3 General Elective 3 General Elective **15 Semester hours**
Fall Semester Year 3 3 CSCE 35103 Software Engineering (Satisfies General Education Outcome 6.1) 3 ENGL 30503 Technical and Professional Writing 4 Science Elective with lab (Meets State Minimum Core and Satisfies General Education Outcome 3.4) 3 General Elective 3 General Elective **16 Semester hours**	**Spring Semester Year 3** 3 PHIL 31003 Ethics and the Professions[5] 3 CSCE 36103 Operating Systems 3 Social Sciences Elective (Satisfies General Education Outcome 3.3)[4] 3 General Elective 2 General Elective **14 Semester hours[6]**
Fall Semester Year 4 3 CSCE Elective (30000-level or higher) 3 CSCE Elective (30000-level or higher) 4 Science Elective with lab (Meets State Minimum Core and Satisfies General Education Outcome 3.4) 3 General Elective (30000-level or higher) 3 General Elective (30000-level or higher) **16 Semester hours**	**Spring Semester Year 4** 3 CSCE Elective (30000-level or higher) 3 CSCE Elective (30000-level or higher) 3 General Elective (30000-level or higher) 3 General Elective (30000-level or higher) 3 General Elective (30000-level or higher) **15 Semester hours**

120 Total hours

[1]Students have demonstrated successful completion of the learning indicators identified for learning outcome 2.1, by meeting the prerequisites for MATH 24004.

[2]The Social Sciences Elective courses which satisfy General Education Outcomes 3.3 and 4.1 include: ANTH 10203, COMM 10203, HDFS 14003, HDFS 24103, HIST 11193, HIST 111H3, HIST 11293, HIST 112H3, HIST 20903, HUMN 111H4, HUMN 211H4, INST 28103, INST 281H3, PLSC 20103, PLSC 28103, PLSC 281H3, RESM 28503, SOCI 10103, SOCI 101H3, or SOCI 20103.

[3]The Fine Arts Elective courses which satisfy General Education Outcome 3.1 include: ARCH 10003, ARHS 10003, COMM 10003, DANC 10003, LARC 10003, MUSC 10003, MUSC 100H3, MUSC 10103, MUSC 101H3, MUSC 13303, THTR 10003, THTR 10103, or THTR 101H3.

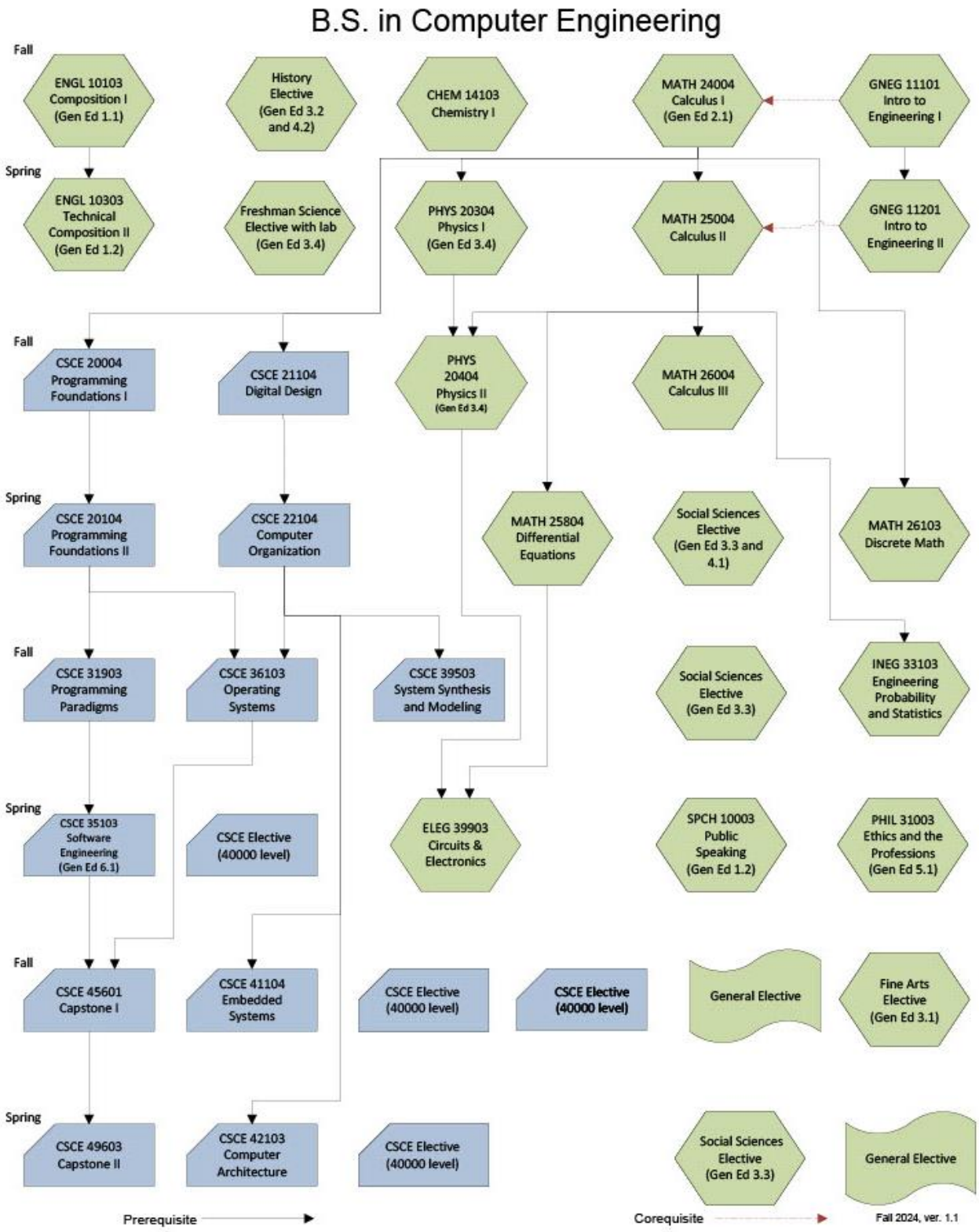
[4]The Social Sciences Elective courses which satisfy General Education Outcome 3.3 include: AGEC 11003, AGEC 21003, ANTH 10203, COMM 10203, ECON 21003, ECON 22003, ECON 21403, EDST 20003, HDFS 14003, HDFS 24103, HDFS 26003, HIST 11193, HIST 111H3, HIST 11293, HIST 112H3, HIST 20003, HIST 20103, HIST 20903, HUMN 111H4, HUMN 211H4, INST 28103, INST 281H3, PLSC 20003, PLSC 20103, PLSC 21003, PLSC 28103, PLSC 281H3, PSYC 20003, RESM 28503, SOCI 10103, SOCI 101H3, SOCI 20103. Note, courses cannot be counted twice in degree requirements.

[5]PHIL 31003 also meets Humanities Elective for State Minimum Core and Satisfies General Education Outcomes 3.2 and 5.1.

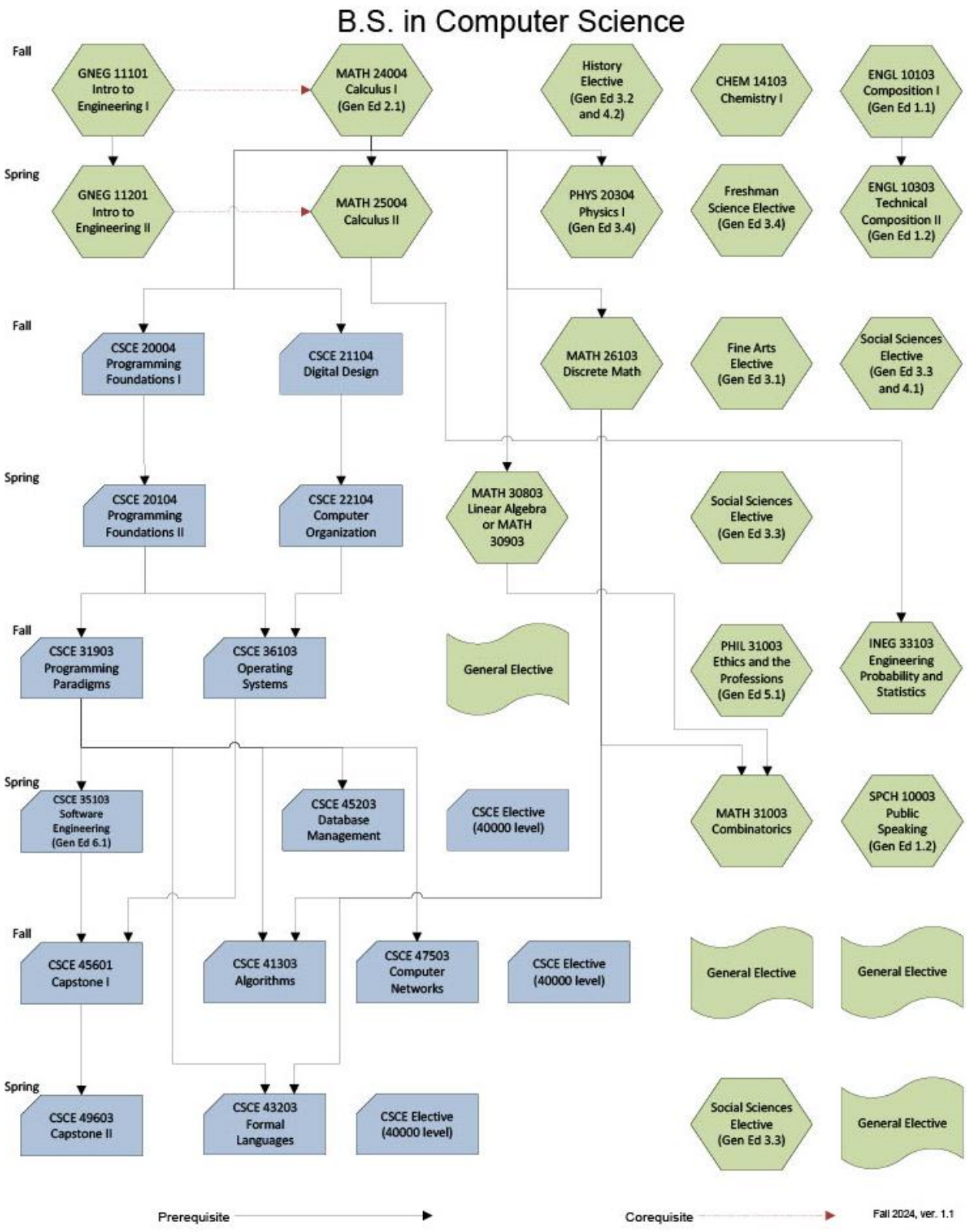
[6]Scholarship students may need to take 1-hour General Elective for 15 semester hours.

Flowcharts

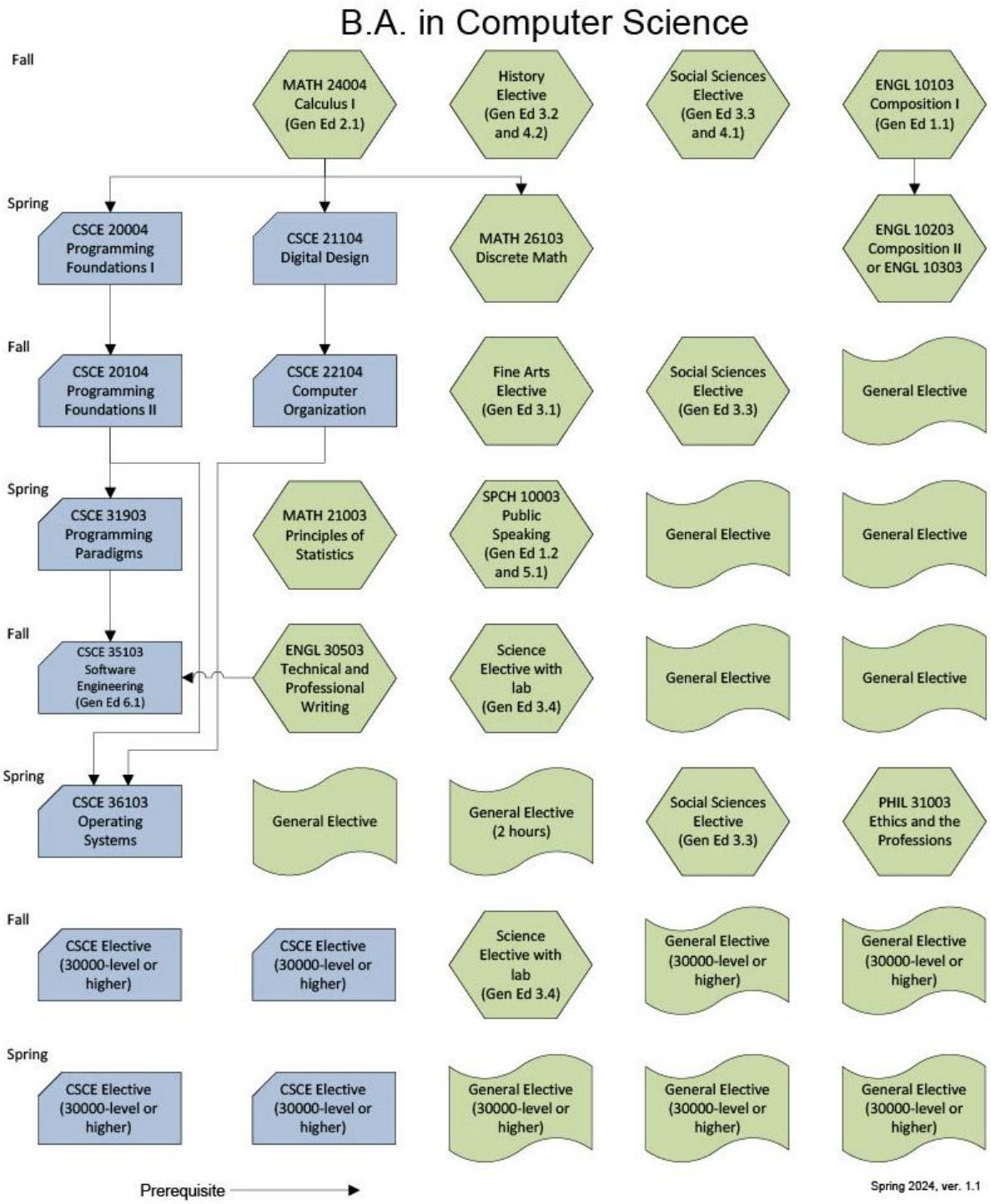
Computer Engineering Bachelor of Science – Fall 2024



Computer Science Bachelor of Science – Fall 2024



Computer Science Bachelor of Arts – Fall 2024



Faculty and Areas of Research

David Andrews, Professor; Real time and Embedded Systems, Computer Architecture, Reconfigurable Computing

Jia Di, Professor and Department Head, Rodger S. Kline Endowed Leadership Chair; Digital Integrated Circuit Design and Analysis, Asynchronous Circuit Design, Extreme Environment Electronics, Hardware Security

Chris Farnell, Assistant Professor; Cybersecurity for Critical Infrastructure, Embedded System Design, FPGA Design, Advanced Control Algorithms, and Power Electronics

Mike Gashler, Teaching Associate Professor; Machine Learning, Neural Networks

John Gauch, Professor; Digital Image Processing, Digital Video Processing, Computer Vision

Susan Gauch, Professor; Personalized Search, Ontologies, Recommender Systems, Social Networks

Miaoqing Huang, Associate Professor; Heterogeneous Many-Core Architecture, High Performance Computing, Hardware-Oriented Security, Hardware Design

Kevin Jin, Associate Professor; Cyber-Physical Energy System Security, Simulation Modeling & Analysis, Software-Defined Networking, Cybersecurity, Parallel & Distributed Simulation

Thi Hoang Ngan (Nancy) Le, Assistant Professor; Image Understanding, Video Understanding, Computer Vision, Robotics, Machine Learning, Deep Learning, Deep Reinforcement Learning, Biomedical Imaging, Single Cell-RNA.

Qinghua Li, Associate Professor, 21st Century Research Leadership Chair; Security & Privacy, Mobile Computing, Smart Grid, Big Data, Access Control

Khoa Luu, Assistant Professor; Deep Learning, Computer Vision, Biometrics, Compressed Sensing, Tensor & Multifactor Analysis, Face-Related Problems (face recognition, face aging, illumination and pose correction)

Ukash Nakarmi, Assistant Professor; Deep Learning & Machine Learning (Medical Imaging and Healthcare & Image Reconstruction/Processing), Compressed Sensing (Computer Vision & Sensors), Networks Signal Processing (Dimensionality Reduction & Semantic Analysis)

Alex Nelson, Associate Professor; Embedded & Distributed Systems, Wearable & Ubiquitous Systems, Cyber-Physical Systems, Assistive Technology Design, Signal Processing, Gesture Recognition, Smart-City/Smart-Community

Yanjun Pan, Assistant Professor; Wireless Security, Network Security, Wireless Sensing, Network Optimization, Wireless Communications

Brajendra Panda, Professor; Database Systems, Computer Security, Computer Forensics, Information Assurance

Matthew Patitz, Associate Professor, Thomas Clinton Mullins Endowed Chair; Nanoscale, Algorithmic Self-Assembly, Biomolecular Computing, Theoretical Computer Science

Yarui Peng, Assistant Professor; Design Automation for Emerging Technologies, Physical and CAD Design of VLSI Circuits, 2.5D and 3D IC – Memory and Packaging, High-Efficiency Power Electronics and Systems, Parasitic Extraction and Signal Integrity, Power and Thermal Reliability

Lora Streeter, Teaching Assistant Professor; Human-Computer Interaction, Gestural Programming

Jim Strother, Instructor; Software Engineering, Software/Hardware Interfacing (robotics, infrared, WiFi), Operating Systems

Dale R. Thompson, Professor; Computer Networks, Cybersecurity, Network Security, Wireless Security, Operating Systems

Xintao Wu, Professor, Charles D. Morgan/Acxiom Graduate Research Chair; Privacy Preserving Data Mining, Fraud Detection, Anti-Discrimination Learning, Spectral Graph Analysis

Lu Zhang, Assistant Professor; Fairness in Data Mining, Casual Modeling, Data Mining & Privacy, Resource Processing in Distributed Networks and Approximation Algorithms