CSCE Undergraduate Handbook

2022-2023

Departmental Contacts:

Main Office – 479-575-6197

Email – info@csce.uark.edu

http://csce.uark.edu

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CSCE Department Information

CSCE 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 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, http://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 4433 Cryptography
- CSCE 4753 Computer Networks
- CSCE 4783 Cloud Computing and Security
- CSCE 4853 Information Security

Note: These three classes can be counted as CSCE 4000 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, cyber security 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, http://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 4433 Cryptography
- CSCE 4783 Cloud Computing and Security
- CSCE 4853 Information Security

Note: These three classes can be counted as CSCE 4000 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

CSCE 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 491VH and 3 hours of non-thesis coursework (courses with honors designation or 5000-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 2004 Programming Foundation I.

Credit by exam for CSCE 2004 is available to students who have a strong programming background that includes all the content taught in CSCE 2004. Typically, this background is obtained by taking other programming classes, or though work experience. Credit by exam is not intended as a method for students to teach themselves programming and avoid taking CSCE 2004. 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 2004 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 info@csce.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.

http://catalog.uark.edu/undergraduatecatalog/academicregulations/advancedstandingprograms/#advanceplacementtext

Note: *Students who receive exemptions for ENGL 1013 and/or ENGL 1023 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 2554 Calculus I. If the transfer student enters the CSCE department directly, the two courses that are required for FEP (GNEG 1111 and GNEG 1121) 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 2004 Programming Foundations I
CSCE 2014 Programming Foundations II
CSCE 3193 Programming Paradigms
Three additional CSCE courses at the 2000-level or higher (9 hours)

Total Hours 20

Math Minor requirements

A grade of C or better in the following courses:

MATH 2564 Calculus II
MATH 2603 Discrete Mathematics
or MATH 2803 Transition to Advanced Mathematics
or MATH 3583 Foundations of Applied Mathematics
or MATH 4423 Introduction to Partial Differential Equations
3 courses selected from the following:
MATH 2574 Calculus III
MATH 2584 Elementary Differential Equations
STAT 3013 Introduction to Probability
Any MATH courses at the 3000-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 5000-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.**

Student must get permission from instructor to take a graduate class. Contact the department at info@csce.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 a CSCE faculty advisor their first semester of enrollment in a CSCE degree program. Typically, this advisor will remain with the student throughout their academic career. Students can find the name of their faculty advisor in the UAConnect system in their student account.

How Advising Works

Priority 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 Priority 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 is in the Student Center. A detailed description of the degree audit system can be found at http://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 info@csce.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 1203, MATH 1204, MATH 1213, MATH 1284, 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 (3000- and 4000-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 3000-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 4000-level or higher course not required for the degree **except for CSCE 490V Individual Study**. B.A. in Computer Science students can choose from any CSCE 3000-level or higher course not required for the degree **with the exception of CSCE 490V**.

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

STEM Elective
MATH 4253/PHIL 4253 Symbolic Logic I
MATH 4353 Numerical Linear Algebra
MATH 4363 Numerical Analysis
ELEG 3924 Microprocessor System 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
MGMT 3933/SEVI 3933 Entrepreneurship and New Venture Development
MGMT 4253 Leadership
MGMT 4433 Small Enterprise Management
MGMT 4993 Entrepreneurship Practicum

Common Course Substitutions

- STAT 3013 Introduction to Probability and STAT 3113 Introduction to Mathematical Statistics, together, is a valid substitution for INEG 3313 Engineering Probability and Statistics.
- MATH 2803 Transition to Advanced Mathematics is a valid substitution for MATH 2603 Discrete Mathematics.
- MATH 3093 Abstract Linear Algebra is a valid substitution for MATH 3083 Linear Algebra.

Petitions

If a student wishes to take a STEM or Professional 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 info@csce.uark.edu.

Eight Semester Degree Plans

Computer Engineering 8 Semester Plan – Fall 2022

Fall Semester Year 1 1 GNEG 1111 Introduction to Engineering I 4 MATH 2554 Calculus I (Satisfies General Education Outcome 2.1)[1] 3 CHEM 1103 University Chemistry I 3 ENGL 1013 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 2003 or HIST 2013 **14 Semester hours**	**Spring Semester Year 1** 1 GNEG 1121 Intro to Engineering II 4 MATH 2564 Calculus II 4 PHYS 2054 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 1543/1541L Principles of Biology, CHEM 1123/1121L University Chemistry II, GEOS 1113/1111L Physical Geology 3 ENGL 1033 Technical Composition II (Satisfies General Education Outcome 1.2) **16 Semester hours**
Fall Semester Year 2 4 CSCE 2004 Programming Foundations I 4 CSCE 2114 Digital Design 4 MATH 2574 Calculus III 4 PHYS 2074 University Physics II (Satisfies General Education Outcome 3.4) **16 Semester hours**	**Spring Semester Year 2** 4 CSCE 2014 Programming Foundations II 4 CSCE 2214 Computer Organization 4 MATH 2584 Elementary Differential Equations 3 MATH 2603 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 3193 Programming Paradigms 3 CSCE 3613 Operating Systems 3 CSCE 3953 System Synthesis and Modeling 3 Social Sciences Elective (Satisfies General Education Outcome 3.3)[3] 3 INEG 3313 Engineering Probability and Statistics[4] **15 Semester hours**	**Spring Semester Year 3** 3 CSCE 3513 Software Engineering (Satisfies General Education Outcome 6.1) 3 CSCE Elective (4000 level) 3 ELEG 3933 Circuits & Electronics 3 PHIL 3103 Ethics and the Professions (Satisfies General Education Outcome 5.1) 3 COMM 1313 Public Speaking (Satisfies General Education Outcome 1.2) **15 Semester hours**
Fall Semester Year 4 1 CSCE 4561 Capstone I 4 CSCE 4114 Embedded Systems 3 CSCE Elective (4000 level) 3 CSCE Elective (4000 level) 3 Fine Arts Elective (Satisfies General Education Outcome 3.1)[6] 3 General Elective **17 Semester hours**	**Spring Semester Year 4** 3 CSCE 4213 Computer Architecture 3 CSCE 4963 Capstone II 3 CSCE Elective (4000 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 2554

[2]The Social Sciences Elective courses which satisfy General Education Outcomes 3.3 and 4.1 include: ANTH 1023, COMM 1023, HDFS 1403, HDFS 2413, HIST 1113, HIST 1113H, HIST 1123, HIST 1123H, HIST 2093, HUMN 1114H, HUMN 2114H, INST 2013, INST 2813, INST 2813H, PLSC 2013, PLSC 2813, PLSC 2813H, RESM 2853, SOCI 2013, SOCI 2013H, or SOCI 2033.

[3]The Social Sciences Elective courses which satisfy General Education Outcome 3.3 include: AGEC 1103, AGEC 2103, ANTH 1023, COMM 1023, ECON 2013, ECON 2023, ECON 2143, EDST 2003, HDFS 1403, HDFS 2413, HDFS 2603, HIST 1113, HIST 1113H, HIST 1123, HIST 1123H, HIST 2003, HIST 2013, HIST 2093, HUMN 1114H, HUMN 2114H, INST 2013, INST 2813, INST 2813H, PLSC 2003, PLSC 2013, PLSC 2203, PLSC 2813, PLSC 2813H, PSYC 2003, RESM 2853, SOCI 2013, SOCI 2013H, SOCI 2033. Note, courses cannot be counted twice in degree requirements.

[4]Student may petition to take the two-course sequence, STAT 3013 and STAT 3113, instead of INEG 3313.

[5]Student must take lab.

[6]The Fine Arts Elective courses which satisfy General Education Outcome 3.1 include: ARCH 1003, ARHS 1003, COMM 1003, DANC 1003, LARC 1003, MLIT 1003, MLIT 1003H, MLIT 1013, MLIT 1013H, MLIT 1333, THTR 1003, THTR 1013, or THTR 1013H.

Computer Science B.S. 8 Semester Plan – Fall 2022

Fall Semester Year 1 1 GNEG 1111 Introduction to Engineering I 3 ENGL 1013 Composition I (Satisfies General Education Outcome 1.1) 3 CHEM 1103 University Chemistry I 4 MATH 2554 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 2003 or HIST 2013. **14 Semester hours**	**Spring Semester Year 1** 1 GNEG 1121 Intro to Engineering II 4 MATH 2564 Calculus II 4 PHYS 2054 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 1543/1541L Principles of Biology, CHEM 1123/1121L University Chemistry II, GEOS 1113/1111L Physical Geology, PHYS 2074 University Physics II (must have credit for PHYS 2054) 3 ENGL 1033 Technical Composition II (Satisfies General Education Outcome 1.2) **16 Semester hours**
Fall Semester Year 2 4 CSCE 2004 Programming Foundations I 4 CSCE 2114 Digital Design 3 MATH 2603 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 2014 Programming Foundations II 4 CSCE 2214 Computer Organization 3 MATH 3083 Linear Algebra 3 Social Sciences Elective (Satisfies General Education Outcome 3.3)[4] **14 Semester hours[5]**
Fall Semester Year 3 3 CSCE 3193 Programming Paradigms 3 CSCE 3613 Operating Systems 3 INEG 3313 Engineering Probability and Statistics[5] 3 PHIL 3103 Ethics and the Professions (Satisfies General Education Outcome 5.1) 3 General Elective **15 Semester hours**	**Spring Semester Year 3** 3 CSCE 3513 Software Engineering (Satisfies General Education Outcome 6.1) 3 CSCE 4523 Database Management Systems 3 CSCE Elective (4000 level) 3 MATH 3103 Combinatorics 3 COMM 1313 Public Speaking (Satisfies General Education Outcome 1.2) **15 Semester hours**
Fall Semester Year 4 1 CSCE 4561 Capstone I 3 CSCE 4133 Algorithms 3 CSCE 4753 Computer Networks 3 CSCE Elective (4000 level) 3 General Elective 3 General Elective **16 Semester hours**	**Spring Semester Year 4** 3 CSCE 4963 Capstone II 3 CSCE 4323 Formal Languages and Computability 3 CSCE Elective (4000 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 2554.

[2]The Fine Arts Elective courses which satisfy General Education Outcome 3.1 include: ARCH 1003, ARHS 1003, COMM 1003, DANC 1003, LARC 1003, MLIT 1003, MLIT 1003H, MLIT 1013, MLIT 1013H, MLIT 1333, THTR 1003, THTR 1013, or THTR 1013H.

[3]The Social Sciences Elective courses which satisfy General Education Outcomes 3.3 and 4.1 include: ANTH 1023, COMM 1023, HDFS 1403, HDFS 2413, HIST 1113, HIST 1113H, HIST 1123, HIST 1123H, HIST 2093, HUMN 1114H, HUMN 2114H, INST 2013, INST 2813, INST 2813H, PLSC 2013, PLSC 2813, PLSC 2813H, RESM 2853, SOCI 2013, SOCI 2013H, or SOCI 2033.

[4]The Social Sciences Elective courses which satisfy General Education Outcome 3.3 include: AGEC 1103, AGEC 2103, ANTH 1023, COMM 1023, ECON 2013, ECON 2023, ECON 2143, EDST 2003, HDFS 1403, HDFS 2413, HDFS 2603, HIST 1113, HIST 1113H, HIST 1123, HIST 1123H, HIST 2003, HIST 2013, HIST 2093, HUMN 1114H, HUMN 2114H, INST 2013, INST 2813, INST 2813H, PLSC 2003, PLSC 2013, PLSC 2203, PLSC 2813, PLSC 2813H, PSYC 2003, RESM 2853, SOCI 2013, SOCI 2013H, SOCI 2033. Note, courses cannot be counted twice in degree requirements.

[5]Student may petition to take the two-course sequence, STAT 3013 and STAT 3113, instead of INEG 3313.

Computer Science B.A. 8 Semester Plan – Fall 2022

Fall Semester Year 1 3 ENGL 1013 Composition I (Satisfies General Education Outcome 1.1) 4 MATH 2554 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 2003 or HIST 2013 **13 Semester hours[6]**	**Spring Semester Year 1** 4 CSCE 2004 Programming Foundations I 4 CSCE 2114 Digital Design 3 ENGL 1023 Composition II (Satisfies General Education Outcome 1.1) or ENGL 1033 Technical Composition II 3 MATH 2603 Discrete Mathematics **14 Semester hours[6]**
Fall Semester Year 2 4 CSCE 2014 Programming Foundations II 4 CSCE 2214 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 3193 Programming Paradigms 3 COMM 1313 Public Speaking (Satisfies General Education Outcomes 1.2 and 5.1) 3 STAT 2303 Principles of Statistics 3 General Elective 3 General Elective **15 Semester hours**
Fall Semester Year 3 3 CSCE 3513 Software Engineering (Satisfies General Education Outcome 6.1) 3 ENGL 3053 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 3103 Ethics and the Professions[5] 3 CSCE 3613 Operating Systems 3 Social Science Elective (Satisfies General Education Outcome 3.3)[4] 5 General Electives **14 Semester hours[6]**
Fall Semester Year 4 3 CSCE Elective (3000-level or higher) 3 CSCE Elective (3000-level or higher) 4 Science Elective with lab (Meets State Minimum Core and Satisfies General Education Outcome 3.4) 3 General Elective (3000-level or higher) 3 General Elective (3000-level or higher) **16 Semester hours**	**Spring Semester Year 4** 3 CSCE Elective (3000-level or higher) 3 CSCE Elective (3000-level or higher) 3 General Elective (3000-level or higher) 3 General Elective (3000-level or higher) 3 General Elective (3000-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 2554.

[2]The Social Sciences Elective courses which satisfy General Education Outcomes 3.3 and 4.1 include: ANTH 1023, COMM 1023, HDFS 1403, HDFS 2413, HIST 1113, HIST 1113H, HIST 1123, HIST 1123H, HIST 2093, HUMN 1114H, HUMN 2114H, INST 2013, INST 2813, INST 2813H, PLSC 2013, PLSC 2813, PLSC 2813H, RESM 2853, SOCI 2013, SOCI 2013H, or SOCI 2033.

[3]The Fine Arts Elective courses which satisfy General Education Outcome 3.1 include: ARCH 1003, ARHS 1003, COMM 1003, DANC 1003, LARC 1003, MLIT 1003, MLIT 1003H, MLIT 1013, MLIT 1013H, MLIT 1333, THTR 1003, THTR 1013, or THTR 1013H.

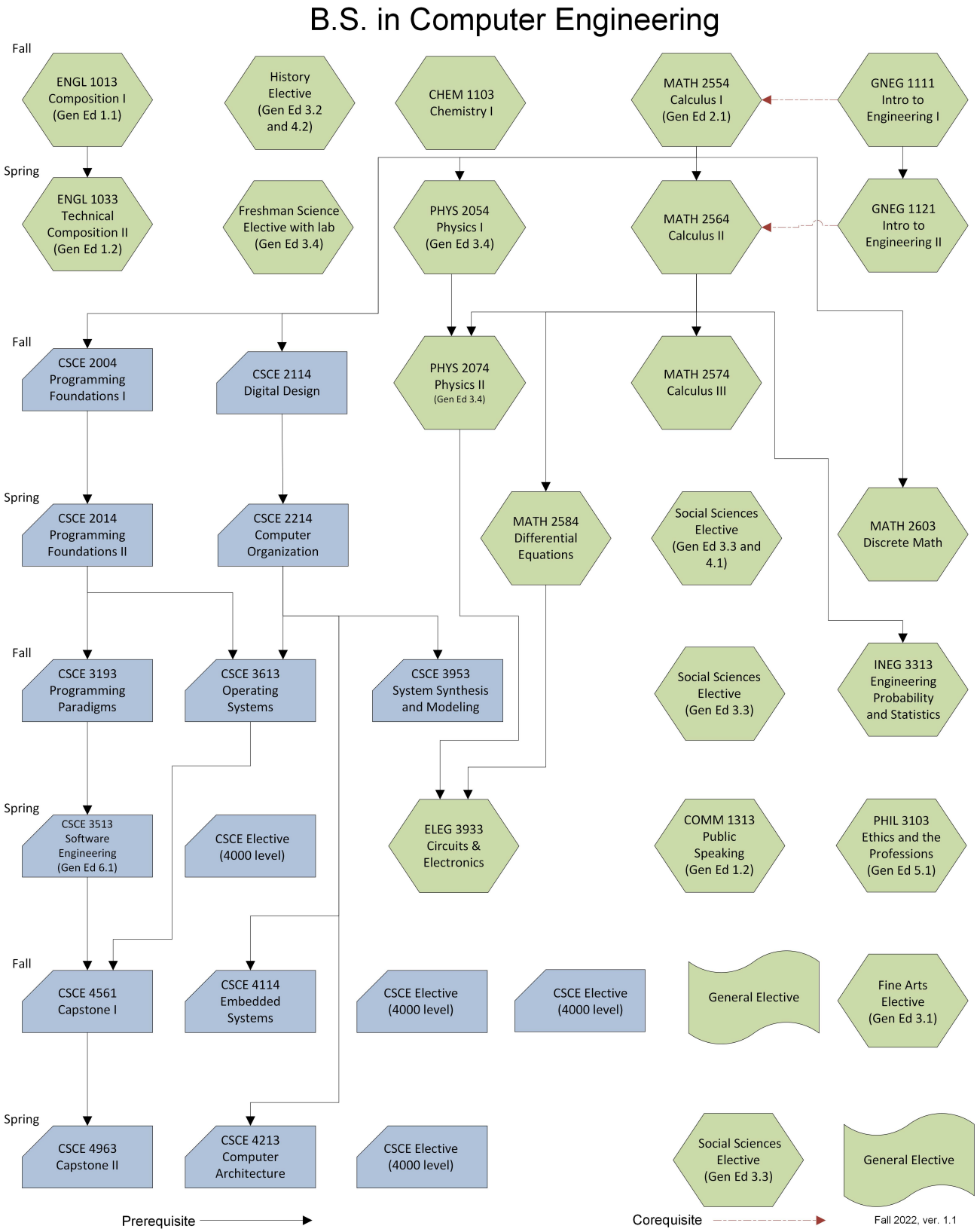
[4]The Social Sciences Elective courses which satisfy General Education Outcome 3.3 include: AGEC 1103, AGEC 2103, ANTH 1023, COMM 1023, ECON 2013, ECON 2023, ECON 2143, EDST 2003, HDFS 1403, HDFS 2413, HDFS 2603, HIST 1113, HIST 1113H, HIST 1123, HIST 1123H, HIST 2003, HIST 2013, HIST 2093, HUMN 1114H, HUMN 2114H, INST 2013, INST 2813, INST 2813H, PLSC 2003, PLSC 2013, PLSC 2203, PLSC 2813, PLSC 2813H, PSYC 2003, RESM 2853, SOCI 2013, SOCI 2013H, SOCI 2033. Note, courses cannot be counted twice in degree requirements.

[5]PHIL 3103 also meets Humanities Elective for State Minimum Core and Satisfies General Education Outcomes 3.2 and 5.1.

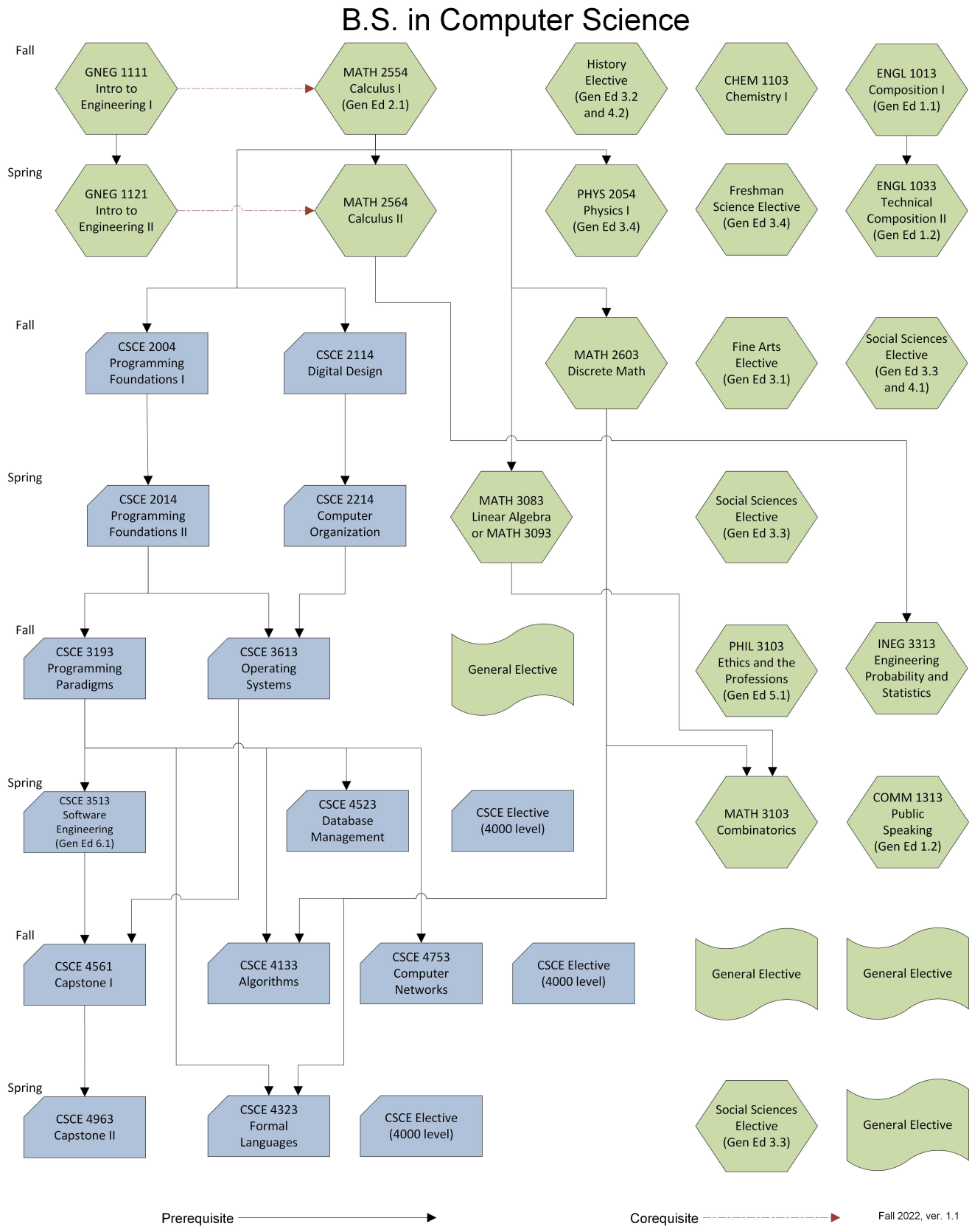
[6]Scholarship students may need to take 1-hour General Elective for 15 semester hours.

Flowcharts

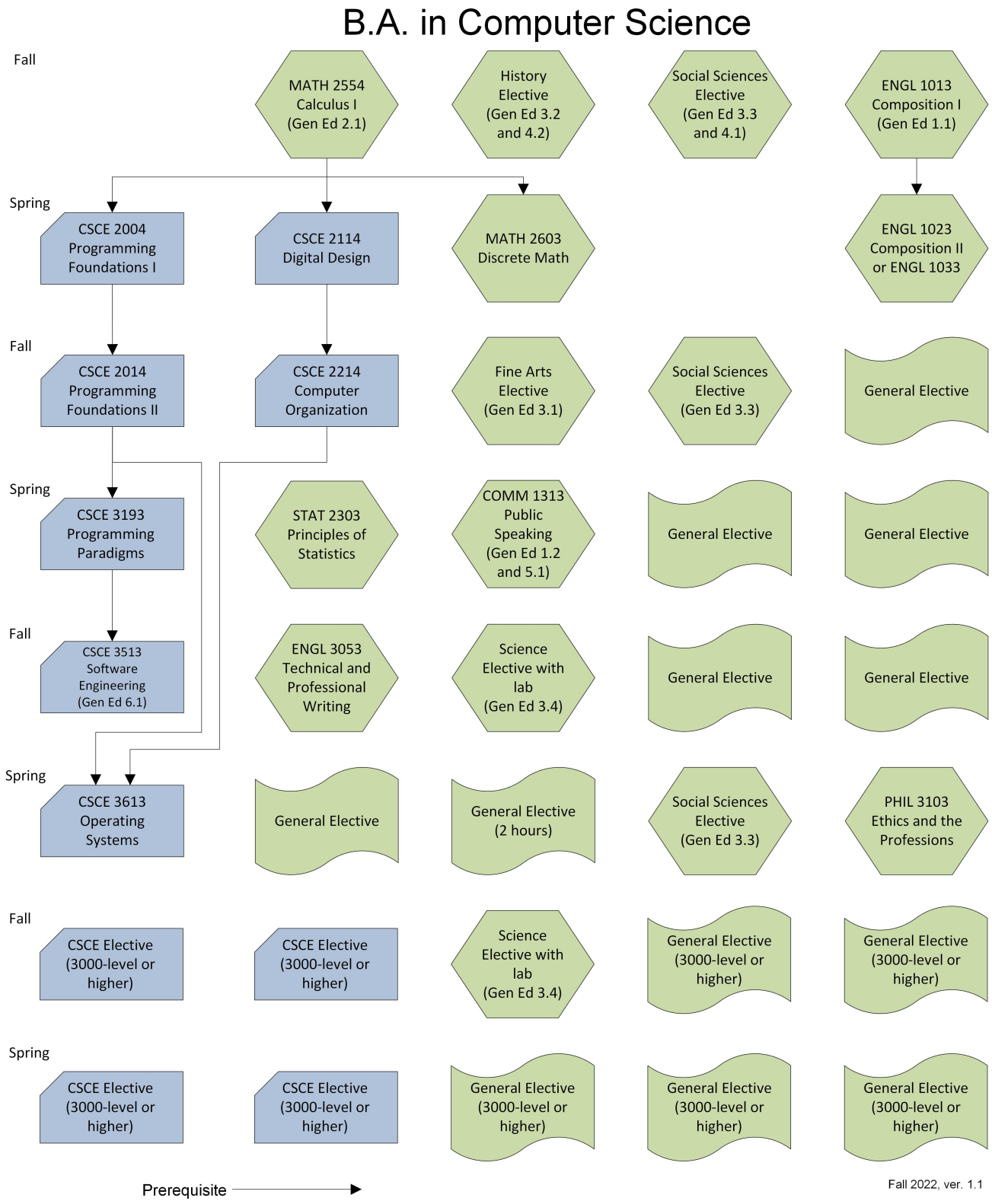
Computer Engineering Bachelor of Science – Fall 2022



Computer Science Bachelor of Science – Fall 2022



Computer Science Bachelor of Arts – Fall 2022



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

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

Dong (Kevin) Jin, Associate Professor; Cyber-Physical Energy System Security, Simulation Modeling & Analysis, Software-Defined Networking, Cyber-Security, 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

Wing Ning Li, Professor; Design Automation, Design & Analysis of Algorithms, Combinatorial Optimization, Software Reuse, Parallel Computing

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, Assistant 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

Pat Parkerson, Associate Professor; IC & ASIC Design, Design Methodologies, Integrated Passive Components, Electronic Packaging Design, Electronic Circuits for Aerospace Applications

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