Contents

Chapter 1 Introduction ................................................................................................................................. 4
  1.1 Current Department Faculty ................................................................................................................. 4
  1.2 Degrees Offered .................................................................................................................................. 8
  1.3 ABET Accreditation ........................................................................................................................... 10
  1.4 CAE Designation ................................................................................................................................ 10

Chapter 2 Bachelor of Science in Computing Science ................................................................................ 10
  2.1 Introduction ................................................................................................................................ 10
  2.2 Suggested Plan of Study .................................................................................................................... 10
  2.3 Course Dependency/Prerequisite Structure ..................................................................................... 11
  2.4 Careers in Computing Science .......................................................................................................... 12

Chapter 3 Bachelor of Science in Software Engineering ............................................................................. 12
  3.1 Introduction ...................................................................................................................................... 12
  3.2 Suggested Plan of Study .................................................................................................................... 13
  3.3 Course Dependency/Prerequisite Structure ..................................................................................... 13
  3.4 Careers in Software Engineering ....................................................................................................... 13

Chapter 4 Bachelor of Science in Cybersecurity .......................................................................................... 13
  4.1 Introduction ...................................................................................................................................... 14
  4.2 Suggested Plan of Study .................................................................................................................... 14
  4.3 Course Dependency/Prerequisite Structure ..................................................................................... 14
  4.4 Careers in Cybersecurity ................................................................................................................... 14

Chapter 5 Minor in Computer Science ........................................................................................................ 14
  5.1 Introduction ...................................................................................................................................... 15
  5.2 Plan of Study ..................................................................................................................................... 15

Chapter 6 Master’s Studies in Computer Science ....................................................................................... 15
  6.1 Degrees Offered ................................................................................................................................ 15
  6.2 How to Apply ..................................................................................................................................... 15
  6.3 Admission FAQ .................................................................................................................................. 15
  6.4 Who to contact? ................................................................................................................................ 15

Chapter 7 Doctorate Degree Program ........................................................................................................ 16
  7.1 Degree Offered .................................................................................................................................. 16
  7.2 How to Apply ..................................................................................................................................... 16

Digital and Cyber Forensic Science ......................................................................................................... 16
Chapter 8 Common Information................................................................................................................. 16

8.1 Academic Advisement....................................................................................................................... 16
8.2 Academic Integrity ............................................................................................................................ 16
8.3 Scholarships and Financial Support .................................................................................................. 16
8.4 Research Opportunity ..................................................................................................................... 17
8.5 Internship Opportunity ................................................................................................................... 18
8.6 Library ............................................................................................................................................... 18
8.7 Career Services .................................................................................................................................. 18
8.8 Facilities ............................................................................................................................................. 18
8.9 Student Organizations ....................................................................................................................... 19
8.10 Frequently Asked Questions ........................................................................................................... 19
Chapter 1 Introduction

Welcome and congratulations to all new students in our three undergraduate degree programs and minor in computer science. The Department of Computing Science offers degree programs for students wishing to pursue careers as a programmer/analyst/software engineer, network and database administrators, digital forensics and information security professionals, or to prepare for advanced studies at the graduate level. Minor study plans are offered which can be tailored to the needs of students majoring in almost any field. The information contained on this handbook is for informational purposes only. The official catalog for undergraduate program requirements may be found online: http://catalog.shsu.edu/undergraduate/colleges-academic-departments/science-and-engineering-technology/computer-science/

1.1 Current Department Faculty

Dr. Min Kyung An  
Associate Professor and Graduate Advisor  
Office: 212G  
Phone: 936-294-4333  
Email: an@shsu.edu  
Website: https://www.shsu.edu/mka012/  
Research area: Internet of Things, Wireless Sensor and Ad Hoc Networks, Design and Analysis of Approximation Algorithms, Graph Theory, Program Analysis

Dr. Mohamed Baza  
Visiting Assistant Professor  
Office: 216E  
Phone: 936-294-3574  
Email: mxb117@shsu.edu

Kirk Burns  
Lecturer  
Online  
Email: lib_kab@shsu.edu
Dr. David Burris  
Professor and University Articulation Coordinator  
Office: 212C  
Phone: 936-294-1568  
Email: csc_dsb@shsu.edu

Dr. Hyuk Cho  
Professor  
Office: 216H  
Phone: 936-294-1535  
Email: hxc005@shsu.edu

Dr. Peter Cooper  
Professor and Doctoral Director of Digital and Cyber Forensic Science  
Office: 212B  
Phone: 936-294-1569  
Email: cooper@shsu.edu

Dr. Brad Glisson  
Associate Professor and Director of Cyber Forensics Intelligence Center (CFIC)  
Office: 208D  
Phone: 936-294-1579  
Email: glisson@shsu.edu  
Website: https://cs.shsu.edu/people/glisson.html  
Research area: Digital Forensics, Information Assurance, Software Engineering, and Applied Computing Science
Dr. ABM Rezbaul Islam  
Assistant Professor  
Office: 212D  
Phone: 936-294-4198  
Email: ari014@shsu.edu  
Website: https://cs.shsu.edu/people/abm_islam.html  
Research area: Computer Vision, Machine Learning and Image processing

Dr. Li-Jen Lester  
Associate Professor  
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Dr. Frank (Qingzhong) Liu  
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Dr. Amar Rasheed  
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Dr. Gary Smith  
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Email: hxv002@shsu.edu

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Assistant Professor  
Office: 212A  
Phone: 936-294-3832  
Email: wei@shsu.edu
1.2 Degrees Offered

The Department of Computer Science offers three bachelor’s degrees, as well as a minor.

- Bachelor of Science in Computing Science (BS in CS), offers three concentrations: Computing Science (CS), Information Assurance (IA), and Information Systems (IS).
- Bachelor of Science in Software Engineering (BS in SE).
- Bachelor of Science in Cybersecurity (BS in CbS).
- Minor in Computer Science.

Details of the degrees are provided later in this document, but in this section we provide major course requirements comparison of the three BS CS concentrations (Figure 1.1) and comparison of the three degrees (Figure 1.2).
Figure 1.1: Course Requirements Comparison of Three BS CS Concentrations

Figure 1.2: Course Requirements Comparison of Three BS Degrees
1.3 ABET Accreditation
The Bachelor of Science in Computing Science (BS in CS) at Sam Houston State University is accredited by the Computing Accreditation Commission of ABET. More information can be found online: https://cs.shsu.edu/abet/

1.4 CAE Designation
The Bachelor of Science in Computing Science (BS in CS)/Information Assurance program at Sam Houston State University is designated as a Center of Academic Excellence by the National Security Agency. More information can be found online: https://www.nsa.gov/resources/students-educators/centers-academic-excellence/

Chapter 2 Bachelor of Science in Computing Science

2.1 Introduction
Students in Bachelor of Science in Computing Science program are expected to select an emphasis from the options of Computing Science (CS), Information Systems (IS), or Information Assurance (IA). Each concentration requires slightly varied coursework, the curriculum overview can be found at:

| Bachelor of Science, Major in Computing Science (Computing Science, CS) |
| Bachelor of Science, Major in Computing Science (Information Systems, IS) |
| Bachelor of Science, Major in Computing Science (Information Assurance, IA) |

2.2 Suggested Plan of Study

| Bachelor of Science, Major in Computing Science (Computing Science, CS) |
| Bachelor of Science, Major in Computing Science (Information Systems, IS) |
| Bachelor of Science, Major in Computing Science (Information Assurance, IA) |
2.3 Course Dependency/Prerequisite Structure

Figure 2.1: Course Dependency/Prerequisite Structure for Concentration in CS

Figure 2.2: Course Dependency/Prerequisite Structure for Concentration in IS
2.4 Careers in Computing Science

- Web Developer
- Business Analyst
- Software Architect
- Applications Engineer
- Digital Forensics Professional
- Information Technology Manager
- Telecommunications Network Engineer
- Geographic Information Systems Analyst

Chapter 3 Bachelor of Science in Software Engineering

3.1 Introduction
The Bachelor of Science in Software Engineering is designed to provide the skills and competencies required by students wishing to pursue a career in software development. Software developers typically focus on either systems or applications. Systems software developers create and maintain the operating systems that make computers and devices run. Application software developers design software programs that run on computers and devices, such as databases and
games. Successful software developers are often strong in mathematics, effective communicators who work well with others, and detail oriented. The curriculum overview can be found at:

Bachelor of Science, Major in Software Engineering

3.2 Suggested Plan of Study

Bachelor of Science, Major in Software Engineering

3.3 Course Dependency/Prerequisite Structure

![Course Dependency/Prerequisite Structure for BS in SE](image)

Figure 3.1: Course Dependency/Prerequisite Structure for BS in SE

3.4 Careers in Software Engineering

- Computer systems design
- Software publishers
- Government agencies
- Electronics manufacturers
- Financial institutions

Chapter 4 Bachelor of Science in Cybersecurity
4.1 Introduction
The Bachelor of Science in Cybersecurity prepares students for professional work in business and industry, as well as government and law enforcement. You will learn the techniques to collect, preserve, analyze, and report digital evidence, the curriculum overview can be found at:

Bachelor of Science, Major in Cybersecurity

4.2 Suggested Plan of Study
Bachelor of Science, Major in Cybersecurity

4.3 Course Dependency/Prerequisite Structure

Figure 4.1: Course Dependency/Prerequisite Structure for BS in Cybersecurity

4.4 Careers in Cybersecurity
- Investigator
- Analyst
- Law Enforcement
- Programmer
- Information Security Specialist

Chapter 5 Minor in Computer Science
5.1 Introduction
A Computer Science Minor consists of 22 or more hours of Computer Science coursework of which at least 9 hours must be advanced. Students are recommended to take COSC 4349 as an advanced course. Three recommended minor plans are shown in section 5.2. Modifications may be made to meet individual student needs as approved by the Computer Science Department Chair. Individualized minor plans are available for students seeking a Computer Science minor for Certification.

5.2 Plan of Study
Minor in Computer Science

Chapter 6 Master’s Studies in Computer Science

6.1 Degrees Offered
At the master’s level there are programs in Computer Information Science, Digital Forensics, and Information Assurance and Cybersecurity. The Digital Forensics and Information Assurance and Cybersecurity programs are consistently ranked among the top online digital forensics and cyber security programs in the nation. The graduate programs service in excess of 100 students. Here’s a list of master’s degree and certificate programs the department currently offer:

- Master of Science in Computing and Information Science (CIS)
- Master of Science in Digital Forensics (DF)
- Master of Science in Information Assurance and Cybersecurity (IAS)
- Graduate Certificate in Cyber Security
- Graduate Certificate in Data Assurance
- Graduate Certificate in Digital Investigation

6.2 How to Apply
https://www.shsu.edu/admissions/applications

6.3 Admission FAQ
https://www.shsu.edu/mka012/graduate/admission.html

6.4 Who to contact?
- Graduate Advisor (Master's and Graduate Certificate Programs): Dr. Min Kyung An, an@shsu.edu, AB1-212G, 936-294-4333
- Graduate Assistantships: Dr. Karpoor Shashidhar, nks001@shsu.edu, AB1-216B, 936-294-1591
- Department Secretary: Ms. Ashley Miksch, arj014@shsu.edu, AB1-214, 936-294-3846
Chapter 7 Doctorate Degree Program

7.1 Degree Offered
The department houses the only doctoral program in the College of Science and Engineering Technology. The Digital and Cyber Forensics Science program is unique in the nation. In support of this program, the department provides a research center, the Cyber Forensics Intelligence Center (CFIC), which is the focal point for research at all levels and a support center for faculty grant proposal development. The CFIC is also the industry outreach unit for the department, providing paths to internship and employment for a number of students.

7.2 How to Apply
Digital and Cyber Forensics Science

7.3 Who to contact?
- **Program Director:** Dr. Peter Cooper, cooper@shsu.edu, AB1-212B, 936-294-1569
- **Department Secretary:** Ms. Ashley Miksch, arj014@shsu.edu, AB1-214, 936-294-3846

Chapter 8 Common Information

8.1 Academic Advisement
Academic advisement is handled within the department by our professors. Each semester, when advisement for the next semester begins, there will be advisement tables posted on the 2nd floor of Academic Building I as well as online on our department page under “Student Resources”. Advisement is split between each professor depending on a student’s last name or classification. The posted table will provide the information a student needs to make an advising appointment with the appropriate professor. Once a student has been advised, they will be able to register for courses when registration opens.

8.2 Academic Integrity
According to Sam Houston State University’s Academic Dishonesty statement, “The University expects all students to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action.”

8.3 Scholarships and Financial Support
Financial support is available to students through grants, loans, scholarships, and work study opportunities. To gain more information on how to obtain this type of support use the following link. This will bring you to the Financial Aid & Scholarships university page. https://www.shsu.edu/dept/financial-aid/

There are many scholarship opportunities for students. A student must apply through Scholarships4Kats. As stated on the university’s scholarship page, “This application
dramatically simplifies the process for students by importing key information from their student data record and allowing them to be automatically considered for all relevant scholarships.”

The following link will bring a student to the university’s scholarship page with more information: https://www.shsu.edu/dept/financial-aid/aid/scholarships

8.4 Research Opportunity

- The team members in Cybersecurity, Multimedia & Analytics Intelligence (CMAI) lab are interested in the study of digital investigations, cybersecurity, multimedia computing and forensics, mobile forensics, network security, biometrics, computer vision, surveillance analytics, bioinformatics, computational forensics, and large data computation analytics, integrated with machine learning, pattern recognition and deep learning techniques, as well as the applications. More information can be found at Dr. Liu's website and google profile are available on the following webpages:
  - https://scholar.google.com/citations?user=zbWu3hUAAAAJ&hl=en&oi=ao
  - https://www.shsu.edu/~qxl005/New/Index/index.html

The CMAI lab is willing to and welcome any collaborations with any faculty members and any students.

- The Digital Forensics Information Intelligence (DFII) research group investigates the extraction of digital evidence from all types of digital media so that it will stand up in a court of law. As societies become increasingly dependent on technology, the importance of digital forensics continues to escalate in today’s globally connected world. In this context, digital forensics research includes topics such as software engineering, reverse engineering, application development, software testing, and algorithm development to understand how devices, software, and information system can be compromised, investigated, and mitigated.

Students at all levels in the Department of Computer Science (DCS) interested in research have access to hands-on research laboratories. This environment encourages students to examine, investigate, and acquire an in-depth understanding of real-world residual data and investigative issues in mobile devices, networks, and traditional forensics.

DFI provides a venue for discussing research outcomes and identifying industry focal points. This interaction fosters an environment that identifies excellent future work opportunities that have practical, cutting-edge impacts for industry practitioners. DFII activities provide a mechanism for introducing students, faculty, and industry participants to research possibilities with cross-disciplinary impact. The faculty currently working with the DFI research group include: Dr. Glisson, Dr. Varol and Dr. Shashidhar.
8.5 Internship Opportunity
The department is currently offering internship opportunities through Cyber Forensics Intelligence Center (CFIC), more information can be found at: https://df.shsu.edu/home/opportunities.html

8.6 Library
The Newton Gresham Library has a wide-ranging collection of books and periodicals that currently support Computer Science and Information Assurance. The following is a selected list of resources which currently support our programs: The Digital Library Core Package (43 journal titles) of the Association of Computing Machinery (ACM), the IEEE Computer Society Digital Library (22 peer reviewed journals), the SAFARI electronic reference collection for programming and IT professionals; EBSCO’s Academic Search Premier full text access to academic journals with links to many of the Library’s electronic journal subscriptions; Westlaw Campus electronic access to cases from state and federal courts; Lexis-Nexis Academic Universe electronic access to law reviews and court cases; Criminal Justice Periodical Index full text access to criminal justice topics. Interlibrary loan and document delivery are monitored to identify additional journals and monographs that need to be added to the collection.

8.7 Career Services
SHSU has a career service center (https://www.shsu.edu/dept/career-services/) which offers career assessments, career counseling and advising, career-related workshops and seminars, up-to-date career information and career-related resources. They also provide the means to pursue student employment, internship, and full-time employment opportunities through BEARKATS GET HIRED online, on-campus interviews, job fairs.

Phone: 936-294-1713
Email: careerservices@shsu.edu
Location: AB 4, Suite 210
Hours: M-F | 8AM-5PM

8.8 Facilities
Offices
Each faculty member in the Computer Science department is allocated an office on the 2nd floor of AB1. The main Computer Science office is in AB1-214 and the faculty offices are in the suites AB1-212 and AB1-216.

Classrooms and Laboratories
The department has (almost) exclusive access to five teaching spaces. Two rooms are equipped as computer laboratories for hands on, practical work. These rooms can accommodate 20 -25 students and are located in AB1-209/211. To log in to the computers in these two rooms, the student will need an account on the CS-Labs network controlled by the CS network/system administrator (Ricky Malcom, ricky.malcom@shsu.edu).
- Two rooms are arranged as small traditional lecture rooms with tiered seating. These rooms can accommodate up to 55 students and are located in AB1-204/206.
- One room is arranged in a conference room style, accommodating up to 18 students located in AB1-202.

Guidance

All students who enroll in computing science course, regardless of their status as a major or minor with the computing science programs has access to the department’s cs-labs network and are provided with credentials separate from university system access credentials. The students can request access to the virtual farm through the CS network/system administrator.

8.9 Student Organizations

Student ACM chapter provides a learning environment through speakers and special projects that unite students, professors, and industry professionals. These relationships help promote the sharing of knowledge and skills related to computer science. The chapter sponsors field trips, campus visits by guest speakers, and occasional student/faculty outings. ACM chapter is located in AB1 203.

8.10 Frequently Asked Questions

You can access the SHSU Computer Science Podcast for Q & A.
- Episode 1: https://open.spotify.com/show/73cjiA6Rg2OyMNDtUpetPQ