TOWSON
UNIVERSITY

Department of Computer and Information Sciences

STUDENT
GUIDEBOOK

TU **TOWSON UNIVERSITY.** | Computer and Information Sciences

WELCOME TO TU

A nationally recognized leader in inclusive excellence, Towson University is a welcoming community for living and learning, and an important anchor institution for the greater Baltimore region. TU advances research and creates opportunities for the public good.

TU connects students to industry experts in intimate learning environments and never stops creating opportunities — which is why Tigers are prepared, no matter what. TU is one of a handful of universities in the country, and the only university in Maryland, to have no achievement gap. This means, Tigers learn in an inclusive environment where all students achieve the same academic success. TU also focuses on providing a well-rounded and dynamic student experience.

BY THE NUMBERS

2,200+
UNDERGRADUATES

300+
GRADUATES

50+
FULL-TIME FACULTY

75+
ADJUNCT FACULTY

As the demand for expertise in computer and information sciences grows, Towson University offers programs to prepare students for high-demand careers. With the continuous evolution of technology, the university's undergraduate and graduate programs, alongside faculty numbers, are expanding to meet these increasing demands.

JESS & MILDRED FISHER COLLEGE OF SCIENCE & MATHEMATICS

The Jess and Mildred Fisher College of Science and Mathematics (FCSM) provides undergraduate and graduate programs in physical, mathematical, computational, and life sciences, prioritizing student success by enhancing retention, persistence, and time-to-graduation. FCSM offers diverse research opportunities and hosts STEM education initiatives like Towson UTeach.

With rigorous undergraduate programs and varied graduate offerings, FCSM equips students for success in scientific and technological fields, fostering lifelong learning. Faculty engage students through interactive teaching, advising, and research, forming partnerships to address local and global needs. Our goal is to be a premier learning environment, producing graduates prepared to excel in diverse career paths.

TU HISTORY

Established in 1866 as the Maryland State Normal School in Baltimore, Towson University relocated to Towson in 1915. It expanded to offer arts and sciences by 1946 and gained university status in 1976. Joining the University System of Maryland in 1988, it became Towson University in 1997. Today, it's a top-ranked public university, offering doctoral programs since 2001.

Discover TU

Why study Computer & Information Sciences?

Computer and information sciences are **critical to innovation** in nearly all fields of endeavor and to the operation of practically any business, institution, organization and agency. Simply put, the world works on computers.

Computer Science

with tracks in *Cyber Operations* and *Software Engineering*

The work of computer scientists falls into three categories: designing and implementing software, devising new ways to use computers, and developing effective ways to solve computing problems.

- **Bachelor of Science** in **Computer Science**
- **Bachelor of Science** in **Computer Science** with **Cyber Operations Track**
- **Bachelor of Science** in **Computer Science** with **Software Engineering Track**

Computer and Mathematical Sciences

The Computer and Mathematical Sciences Major is a focused and flexible program that will prepare you for careers in government, business, industry and education, or further study in graduate or professional school. The Computer and Mathematical Sciences major offers three concentrations:

- **General Concentration**
- **Secondary Education Concentration**
- **Computational Data Science Concentration**

Learn more about the undergraduate programs

Information Systems

with tracks in *Business, Interface Design, Systems* and *Data Analytics*

The field of information systems is concerned with the information that computer systems can provide to aid a company, nonprofit or governmental organization in defining and achieving its goals. The field also involves the processes that an enterprise can implement and improve using information technology.

- **Bachelor of Science** in **Information Systems** with **Business Track**
- **Bachelor of Science** in **Information Systems** with **Data Analytics Track**
- **Bachelor of Science** in **Information Systems** with **Interface Design Track**
- **Bachelor of Science** in **Information Systems** with **Systems Track**

Information Technology

with tracks in *Network Security* and *Data Management & Analytics*

Information technology involves the selection, creation, application, integration and administration of computing and communication technologies to meet user needs in an organizational and societal context. The program prepares you to enter the workplace as an IT professional and grow into leadership positions or pursue research or graduate studies in the IT field.

- **Bachelor of Science** in **Information Technology**
- **Bachelor of Science** in **Information Technology** with **Network Security Track**
- **Bachelor of Science** in **Information Technology** with **Data Management and Analytics Track**

Clubs & Opportunities

BIT Brothers

BIT Brothers is an inclusive club empowering young men of color in tech through guest speakers, workshops, and more to foster growth.

Cyber Defense Club

Cyber Defense Club teaches cyber skills with a focus on hacking. Weekly lectures, guest speakers, and practices prepare members for competitions.

National Student Data Corps

The NSDC at TU promotes skills in data science, computing, and AI through workshops, projects, networking, and career opportunities for all students.

Women in CyberSecurity

WiCyS unites women from academia, research, and industry to share knowledge, experience, and mentoring while fostering diversity and inclusivity for all students.

TU Game Design

TU Game Design members gain hands-on experience in game design, building projects to enhance resumes in game, music, or graphic design.

Sister Scripters

Sister Scripters empowers Black and Brown women in tech, offering workshops and support to build skills, confidence, and professional growth in a diverse space.

Software Engineering Club

TU SEC builds a collaborative community for students of all experience levels to develop software skills through inclusive meetings and shared learning.

National Society of Black Engineers

The NSBE supports minority STEM students with resources, networking opportunities, and a space to connect with peers of similar backgrounds.

iTECH Club

iTECH Club empowers students with career exploration, certification insights, hands-on projects, and job-seeking tips, building a network for IT careers.

Upsilon Pi Epsilon Honor Society

The Towson Beta Chapter of UPE honors academic excellence in Computing and Information disciplines, recognizing top students.

Chandler Crawley
Information Technology

Q: What's your favorite part of being an IT major at TU?

"IT is a really good balance of practical, hands-on-cases. So practical uses of data base, understanding how that stuff works, practical usage as it relates to programming: applications in a functional way."

Jaelyn McCracken
Computer Science

Q: What motivated you to choose TU for undergrad?

"I came to Towson because I knew I wanted to be in Cyber Security and Computer Science, and I know that this area is a hotspot for Cyber Security, between Baltimore City and Washington D.C."

Jason Martinez
Information Systems

Q: What's your favorite part of being an IS major at TU?

"I ultimately chose TU for my college education because of the incredible sense of community it offers. Here, students aren't merely statistics; rather, they are embraced and appreciated for their contributions."

Graduate and Doctoral Programs

M.S. in Computer Science

With an **M.S. in Computer Science** from Towson University, you will meet the demands of the growing and changing field of information technology. The program's **comprehensive curriculum** will provide you with a **solid scientific** and **technical foundation** for pursuing either doctoral work or advanced positions in business, industry and government. Graduates find **high-profile jobs** as **software developers, web developers, and computer security analysts.**

M.S. in Applied Information Technology

Applied Information Technology (AIT) is the study, design, development, implementation and support of information systems to solve the major challenges in today's work environment. Graduate students in the Applied Information Technology Master's degree program can update and enhance their skills in a full range of areas, including **systems development, IT project management, and business analysis**. Students are able to complete the requirements for an embedded graduate certificate (see page 7 for full list of graduate certificates) while working towards the Master's degree.

Accelerated Programs

Towson University offers **accelerated bachelor's to graduate programs** to help you save time and money while pushing your learning to the next level. The CIS Department offers accelerated programs in **Computer Science** and **Applied Information Technology.** There are many benefits, including:

- **Graduate with two degrees** on a shortened timeline
- **Gain a competitive edge** in your industry with advanced skills
- **Individualized career advising** from faculty mentors
- **Faster graduation time** and lower costs

Learn more about the graduate programs

Graduate Certificates

COMPUTER FORENSICS
Graduate Certificate
Complete alone or apply to M.S. in Applied IT

The computer forensics graduate certificate prepares students for in-demand IT roles like digital forensics analysts, specializing in incident response and forensic analysis. Maryland has a high demand for these growing roles.

DATABASE MANAGEMENT SYSTEMS
Graduate Certificate
Complete alone or apply to M.S. in Applied IT

The graduate certificate in database management systems covers database design, development, and management. It's ideal for computing graduates or IT professionals, as well as those seeking to enter or advance in the IT field.

HEALTH INFORMATION TECHNOLOGY
Graduate Certificate
Complete alone or apply to M.S. in Applied IT

The health information technology certificate prepares professionals to improve healthcare delivery through IT, offering an interdisciplinary curriculum that develops skills in healthcare and fosters critical thinking to address public needs.

INFORMATION SECURITY & ASSURANCE
Graduate Certificate
Complete alone or apply to M.S. in Applied IT

The graduate certificate in information security and assurance focuses on securing computer systems. It's available online for those with a bachelor's in IT or related fields and for professionals seeking to enter the IT field.

INFORMATION SYSTEMS MANAGEMENT
Graduate Certificate
Complete alone or apply to M.S. in Applied IT

The graduate certificate in information systems management covers the study, design, and support of computer-based systems. It's suited for IT graduates, current IT professionals, and those from other fields looking to enter IT.

INTERNET APPLICATION DEVELOPMENT
Graduate Certificate
Complete alone or apply to M.S. in Applied IT

The graduate certificate in internet application development focuses on web-based information systems. Offered online, it's ideal for IT graduates seeking career growth and for those without an IT degree looking to transition into the field.

NETWORKING TECHNOLOGIES
Graduate Certificate
Complete alone or apply to M.S. in Applied IT

The networking technologies graduate certificate focuses on designing and supporting information systems for data sharing. Ideal for those with IT degrees, IT professionals without relevant degrees, and individuals with non-IT degrees pursuing IT careers.

SOFTWARE ENGINEERING
Graduate Certificate
Complete alone or apply to M.S. in Applied IT

The software engineering graduate certificate focuses on the design, development, and support of computer-based systems, offering valuable preparation for career advancement or entry into the high-tech workforce.

Sneha Tadepali
M.S. in Applied Information Technology

Q: Why did you choose TU for your graduate studies?

"From dedicated faculty mentors to reseach grants and professional development workshops, I felt confident that Towson would provide me with the support and resources necessary to succeed in my graduate studies and beyond."

Josue Molina Morales
M.S. in Computer Science

Q: What's your favorite part of grad school at TU?

"I think the opportunity of working with professors on things like your thesis or your project. Just getting to experience groundbreaking, cutting-edge new computer science things. It's just been awesome."

Iyanuoluwa Joanna Ahmed
M.S. in Computer Science

Q: Why did you choose TU for your graduate studies?

"I consider TU an international school, having met many international students. I love the diversity and flexibility of evening graduate classes. TU offers high-quality education at an affordable price."

Ph.D. in Information Technology

The Ph.D. program in Information Technology offered by Towson University's Department of Computer and Information Sciences **prepares students for academic research, government and state-of-the art industry positions.** The doctoral program in information technology provides the knowledge and research opportunities you need to position yourself for top-level leadership or faculty positions in academia. You'll explore **data structures and algorithms, operating systems, computer networks, cybersecurity, database systems, project management, software engineering and human-computer interaction.**

About half of our alumni are currently working as tenure-track assistant professors or research scientists across the country and abroad.

Student Experience

Hear from our Ph.D students and alumni about their time at Towson as grad school attendees!

Mia Forbes
Ph.D Information Technology

Q: What have been the most rewarding aspects of your Ph.D?

"My motivation to make a difference where women of color are underrepresented. It gives me fulfillment to pursue my aspirations while simultaneously breaking glass ceilings placed above me."

Papa Pene
Ph.D Information Technology

Q: What inspired you to to pursue a Ph.D in this particular field?
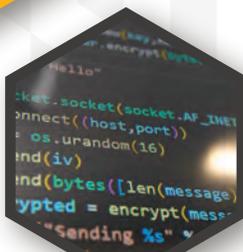
"I pursued my Ph.D. in IT at TU for its diverse computer and information science courses, research opportunities, and highly supportive faculty who offer valuable guidance through my journey."

John Robert Auten Sr.
Ph.D Information Technology

Q: What inspired your Ph.D.?

"I pursued a Doctorate in IT to continue my education and focus my dissertation on my job with the U.S. Army. It explored using artificial neural networks to predict the penetration of kinetic energy rods fired from tanks."

CIS FACULTY RESEARCH

AREAS

Discover how our CIS faculty's evolving expertise enriches our student's learning. Explore our current research areas.

AI, Deep Learning, Big Data Analytics, Climate Informatics, Medical Imaging

Group experts:
Dr. Xin Huang, Dr. Mike McGuire, Dr. Qingqing Li, Dr. Weixian Liao, Dr. Yifan Guo

Analogical Reasoning

Faculty expert:
Dr. Chuck Dierbach

Bioinformatics\Computational Biology

Faculty expert:
Dr. Nadim Alkharouf

Cyber Physical Systems

Faculty experts:
Dr. Wei Yu, Dr. Chao Lu, Dr. Weixian Liao, Dr. Yifan Guo

Human Computer Interaction, Accessibility, Healthinformatics, Data Analytics

Faculty expert:
Dr. Heidi Feng

IoT, Digital Twin, Mobile Crowdsensing and Privacy.

Faculty expert:
Dr. Akshita Maradapu Vera Venkata Sai

Software Engineering, Cybersecurity, Machine Learning, Digital Forensics

Group experts:
Dr. Joshua Dehlinger, Dr. Lin Deng, and Dr. Suranjan Chakraborty

System Security, Malware Analysis, Cyber Deception and Orchestration, ML/DL for Cyber-security (malware detection & classification), Threat Hunting & Intelligence

Faculty expert:
Dr. Md Sajid

FEATURED GROUP

Lin Deng

Dr. Deng is an Associate Professor specializing in software engineering, machine learning, cybersecurity, and digital forensics.

He values the collaborative spirit and commitment to academic excellence at TU, where the diverse student body and supportive environment foster research innovation and growth.

Software Engineering Research Group

The Software Engineering Research Group at TU brings together professors and students with a shared passion for advancing software engineering research. Our work focuses on innovative approaches, such as using machine learning models to detect software bugs and security vulnerabilities.

We hold weekly meetings to collaborate on various research projects, providing students the opportunity to contribute meaningfully to cutting-edge developments in the field. Students involved in our research are compensated through grants. If you're interested in joining, feel free to **reach out to Dr. Dehlinger or Dr. Chakraborty for more information.**

FEATURED PROFESSORS

Faculty in the Computer and Information Sciences Department are committed to teaching excellence and expert guidance. Many have earned research grants and specialize in cutting-edge technologies, bringing them into classrooms and labs. Our adjunct faculty, active in industry, ensure a quality education with strong theoretical foundations and the latest advancements.

QINGQING LI
Assistant Professor

Dr. Li teaches courses in Object Relative Programming, Object Oriented Design, Object Oriented Programming, and Artificial Intelligence. She appreciates the students' eagerness to learn and their willingness to engage in collaborative problem-solving.

HEIDI FENG
Professor

Dr. Feng teaches Data Analytics, Human Computer Interaction, and IS Capstone. She mentors students in problem-solving and theory comprehension, integrating her HCI and accessibility research to make course materials more relevant.

AKSHITA SAI
Assistant Professor

Dr. Sai is a Software Engineering professor with expertise in the Internet of Things, Digital Twin Networks, Privacy, and Security. She values TU's diverse, open, and welcoming community, always ready to offer support.

WILLIE SANDERS
Clinical Assistant Professor

Dr. Sanders is an IT/Cyber-security expert who teaches Systems Administration, Network & Security Practicum, Scripting, Cloud Administration, & Cybersecurity Operations. He created the TU Mock SOC and values TU's supportive community.

JEBA REZWANA
Assistant Professor

Dr. Rezwana specializes in Human-Computer Interaction, focusing on human-AI collaboration and explainable AI. She teaches Intro to Comp Sci, Human-Computer Interaction, and Human Factors in HCI, and values TU's collaborative culture.

MD SAJID
Assistant Professor

Dr. Sajid specializes in System Security, Malware Analysis, Cyber Deception, and Security Data Analytics. He teaches Operating Systems and Security courses and values the collaborative environment and enthusiasm at TU.
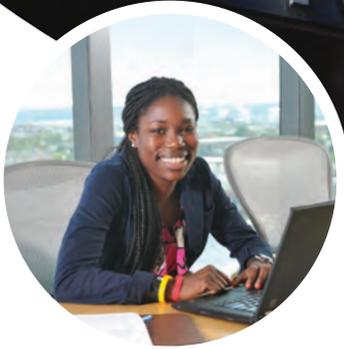
JAL IRANI
Teaching Associate Professor

Jal Irani specializes in and teaches iOS development, cryptos & blockchain, AI, and full-stack web development. His favorite aspect of TU is the support among faculty and the unique perspectives that students bring to the classroom.

The CIS Department supports students' internship and career growth by offering hourly positions like Lab Administrators, Networking Assistants, and Tutors. They each provide hands-on experience that complements studies and prepares students for careers.

Combining coursework with internships and assistantships is crucial for our CIS students, enhancing their education and setting them apart in career readiness and job prospects after graduation.

OUR STUDENT EXPERIENCES

**Connor Brown
Computer Science Major**

"I joined a software development team as an application developer. The role of our team is to ensure that the United States Navy's D5LE nuclear missiles and Ohio class nuclear submarines are maintained effectively."

How did you find this job?
LinkedIn

**Daniel Anoruo
Information Systems Major**

"The first part of my internship involved working with Python and Linux for machine learning. The second part included mentoring children on computer science and engineering, using Python and Scratch for AI and machine learning competitions."

How did you find this job?
NSBE Conference

**Jaelyn McCracken
Computer Science Major**

"I was an intern on the National Incident Response Team for the Federal Reserve Bank. I learned and helped respond to security incidents, as well as protecting the systems of the bank."

How did you find this job?
As an SFS CyberCorps scholar, they helped me get a federal internship for my scholarship.

ADDITIONAL CAREER RESOURCES

HandShake

Handshake is a free online job and internship database for students, alumni, employers, faculty, and staff.

Career Center

The Career Center offers interview prep, resume building, networking, and career guidance.

Graduate Assistantships

Graduate assistantships offer tuition and a stipend for work, providing educational and professional benefits.

MEET OUR ALUMNI

The Computer and Information Sciences Department is proud of our alumni and the paths they've taken after college. We're excited to share their stories—including those of alumni who have returned to work within our department, bringing valuable expertise and insights from their experiences to enrich our community.

Alumni Spotlight

Carlos Mina Lopez
B.S. Computer Science
AI/ML Research Engineer

"My degree has equipped me with effective programming principles that have been instrumental in my current role as an AI/ML Research Engineer supporting US Army DEVCOM, where collaboration with peers in the same domain is a key focus."

Michelle Bowman
M.S. Computer Science
Graduate Programs Coordinator

"As Graduate Programs Coordinator, I manage admissions, academic services, and systems for CIS grad programs. My experience as a TU alum helps me support students and collaborate on curriculum improvements. TU combines big-university perks with a small-town feel, which I love."

Paige A. Flores
Ph.D Information Technology
Adjunct Professor

"Since graduation, I've applied my degrees across edtech as a software engineer, project manager, adjunct professor at TU, and director of operations. In each role, I've developed applications, led teams, optimized processes, and contributed to creating innovative learning solutions."

Advancing Your Career

We're committed to you, beyond graduation. Even after you leave campus, TU will continue to provide career resources and opportunities to reconnect with the community.

As a TU alumnus or alumna, you have access to career resources to advance your career and reach new goals.

TU alumni have access to:

- Unlimited access to Handshake database
- Free admission to job fairs and events
- Access to LinkedIn networking groups
- Curated non-TU Career Center resources
- On-campus recruiting
- Career skills, including resumes, salary negotiation, and interview tips

Meet Our Career Specialist

Bruce Laws
Career Advising Specialist

Bruce Laws is the Career Advising Specialist for the CIS department. He is an onsite resource for students in all aspects of career success. Through a partnership with the Career Center, he helps ensure that students are on the right track for their career development opportunities.

CIS STUDENT RESOURCES

CIS ADVISING HUB

The CIS Advising Hub is a resource for the students of the CIS Department and those interested in the computing majors. We provide resources for advising such as creating degree completion plans, choosing classes, and insight into each major.

Students are encouraged to meet with Student Advisors at the CIS Advising Hub located in YR207 on the second floor of the 7800 York Road building.

SERVICES

Run by computing majors in our department, Student Advisors can help with:

- Answering CIS department questions
- Suggesting Classes
- DCP Plans

- Changing majors/Transfer Questions
- Add/Drop and Withdraw
- Understanding Major Requirements

CONTACT   **2nd Floor in 7800 YR | 410-704-4776 | cisadvising@towson.edu**

TECHHUB

The TechHub provides technical information and resources to students, faculty and staff in the Department of Computer and Information Sciences.

SERVICES

- Help with installing course software
- Help with COSC 175, COSC 236, & COSC 237
- Help with ITEC 231 & ITEC 274

CONTACT   **4th Floor 7800 YR | cisadvising@towson.edu**

ADDITIONAL
RESOURCES

Career Center

The Career Center assists with writing resumes, finding internships, developing job search strategies, and practicing interviews.

CLA Writing Center

The Writing Center provides the assistance you need at every stage of the writing process, from brainstorming to final draft.

Counseling Center

The Counseling Center provides flexible, culturally responsive care. Discover workshops, groups, and peer support at Counseling Center.

Public Communications Center

The PCC provides speech advice to improve speaking skills, increase preparedness and confidence, and expand advocacy skills.

Student Involvement

At TU, experience it all! From dance to athletics, guest lectures to concerts, our campus offers diverse events and activities for students to enjoy.

Tutoring & Learning Center

The Tutoring and Learning Center offers free services to TU students, helping them identify and achieve academic goals.

LEARN MORE

To explore all of TU's academic services and resources, scan the QR code below.

SUPPORT OUR DEPARTMENT

CONTACT INFO

7800 York Road, Suite 406
Mon - Fri : 8:00 a.m. - 5:00 p.m.
410-704-2633
cisadvising@towson.edu
@tu_cis