

# Computer & Information Technology

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To find faculty & staff phone numbers and email addresses, please consult the University Directory (<http://www.dixie.edu/directory/directory.php>).

## Department Chair

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## Advisor/Support Coordinator

Nikki Dang, M.Ed.

## Lecturer/Advisor

Carol Stander, MLTID

## Dean

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## Administrative Assistant

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## Program Description

The Computer & Information Technology (CIT) programs at DSU have the latest equipment, the best software, as well as a strong faculty who can teach students to use it well. The CIT programs prepare students for careers in illustration, web development, multimedia, digital video, systems administration, security and networking, software engineering, and computer science.

The department offers students two Bachelor of Science degrees: Computer Science (CS) and Computer & Information Technology (CIT). Within the CIT degree, there is a general program as well as the option to focus on any of four areas: Digital Design, Information Technology, Software Development or Web Design & Development.

CIT also coordinates with the Udvar-Hazy School of Business in offering an emphasis within the Bachelor of Science in Business Administration program: Management Information Systems. Some certificates are also available.

The fields of Computer & Information Technology are diverse, exciting, rapidly changing, and ever expanding. The DSU programs offer students the opportunity to be challenged in small, personalized classes where they can develop your knowledge and skills to be successful.

## What is the Study of CIT?

To compete in a 21st century digital economy, every organization needs knowledgeable, technologically-savvy professionals.

The Dixie State University CIT Department specializes in providing a state-of-the-art education in advanced computer literacy, networking, operating system, software applications, graphic design, programming, Internet and Web publishing, e-commerce, and related technology-oriented training.

The Computer Information Technology (CIT) degree offers an integration of the four areas of emphasis as described below:

**Digital Design (DES):** This emphasis specializes in creating interface designs for websites, preferred user experiences, interactive design, multimedia, and print.

**Information Technology (IT):** This emphasis offers a rigorous preparation in critical technology areas such as software/hardware systems, database structures, security, server configuration, and networking.

**Software Development (mostly CS):** This emphasis offers a wide range of courses which addresses fundamental issues such as algorithm design, languages, graphics, operating systems, object-oriented methods, parallel processing, artificial intelligence, compilers, mobile app programming, and web programming.

**Web Design & Development (WEB):** This emphasis specializes in designing and developing websites, including comprehensive internet development projects.

In addition, the CIT department offers a Bachelor's of Science in Computer Science (CS), which is the study and application of the theories and principles used to create, test, and evaluate the software applications and systems that make computers work. This rapidly evolving field reflects changes in technology as well as the changing practices of employers.

## Course Prefixes

- CIT, CS, DES, IT, WEB

## ACM Club

Dixie State University's Association of Computing Machinery (ACM) Club, also known as the Computer Club, provides computer enthusiasts a place to meet, form friendships, share ideas and play computer games. The club meets every week on Thursday evenings.

Each fall semester members participate in the ACM's international programming contest. During the spring semester the ACM Club sponsors a local programming contest for students from Dixie State University and local high schools. For more information, contact Dr. Bob Nielson, the club's faculty advisor.

## Degrees & Certificates

### Bachelor's Degrees

- Bachelor of Science in Computer Science ([catalog.dixie.edu/programs/computerinformationtechnology/bachelor\\_of\\_science\\_in\\_computer\\_science](http://catalog.dixie.edu/programs/computerinformationtechnology/bachelor_of_science_in_computer_science))
- Bachelor of Science in Computer & Information Technology ([catalog.dixie.edu/programs/computerinformationtechnology/bachelor\\_of\\_science\\_in\\_computer\\_information\\_technology](http://catalog.dixie.edu/programs/computerinformationtechnology/bachelor_of_science_in_computer_information_technology))
- Bachelor of Science in Computer & Information Technology – Digital Design Emphasis ([catalog.dixie.edu/programs/computerinformationtechnology/bachelor\\_of\\_science\\_in\\_computer\\_information\\_technology\\_digital\\_design\\_emphasis](http://catalog.dixie.edu/programs/computerinformationtechnology/bachelor_of_science_in_computer_information_technology_digital_design_emphasis))
- Bachelor of Science in Computer & Information Technology – Information Technology Emphasis ([catalog.dixie.edu/programs/computerinformationtechnology/bachelor\\_of\\_science\\_in\\_computer\\_information\\_technology\\_information\\_technology\\_emphasis](http://catalog.dixie.edu/programs/computerinformationtechnology/bachelor_of_science_in_computer_information_technology_information_technology_emphasis))
- Bachelor of Science in Computer & Information Technology – Software Development Emphasis ([catalog.dixie.edu/programs/computerinformationtechnology/bachelor\\_of\\_science\\_in\\_computer\\_information\\_technology\\_computer\\_science\\_emphasis](http://catalog.dixie.edu/programs/computerinformationtechnology/bachelor_of_science_in_computer_information_technology_computer_science_emphasis))
- Bachelor of Science in Computer & Information Technology – Web Design & Development Emphasis ([catalog.dixie.edu/programs/computerinformationtechnology/bachelor\\_of\\_science\\_in\\_computer\\_information\\_technology\\_web\\_design\\_emphasis](http://catalog.dixie.edu/programs/computerinformationtechnology/bachelor_of_science_in_computer_information_technology_web_design_emphasis))
- Bachelor of Arts/Science in Integrated Studies - Digital Design Emphasis ([catalog.dixie.edu/programs/interdisciplinaryartsandsciences/bachelor\\_of\\_science\\_bachelor\\_of\\_arts\\_in\\_integrated\\_studies\\_digital\\_design](http://catalog.dixie.edu/programs/interdisciplinaryartsandsciences/bachelor_of_science_bachelor_of_arts_in_integrated_studies_digital_design))
- Bachelor of Arts/Science in Integrated Studies - Information Technology Emphasis ([catalog.dixie.edu/programs/interdisciplinaryartsandsciences/bachelor\\_of\\_science\\_bachelor\\_of\\_arts\\_in\\_integrated\\_studies\\_information\\_technology\\_emphasis](http://catalog.dixie.edu/programs/interdisciplinaryartsandsciences/bachelor_of_science_bachelor_of_arts_in_integrated_studies_information_technology_emphasis))
- Bachelor of Arts/Science in Integrated Studies - Software Development Emphasis ([catalog.dixie.edu/programs/interdisciplinaryartsandsciences/bachelor\\_of\\_science\\_bachelor\\_of\\_arts\\_in\\_integrated\\_studies\\_computer\\_science\\_emphasis](http://catalog.dixie.edu/programs/interdisciplinaryartsandsciences/bachelor_of_science_bachelor_of_arts_in_integrated_studies_computer_science_emphasis))
- Bachelor of Arts/Science in Integrated Studies - Web Design & Development Emphasis ([catalog.dixie.edu/programs/interdisciplinaryartsandsciences/bachelor\\_of\\_science\\_bachelor\\_of\\_arts\\_in\\_integrated\\_studies\\_web\\_design\\_development](http://catalog.dixie.edu/programs/interdisciplinaryartsandsciences/bachelor_of_science_bachelor_of_arts_in_integrated_studies_web_design_development))

### Minors

- Minor in Computer Science ([catalog.dixie.edu/programs/minor\\_in\\_computer\\_science](http://catalog.dixie.edu/programs/minor_in_computer_science))
- Minor in Digital Design ([catalog.dixie.edu/programs/minor\\_in\\_digital\\_design](http://catalog.dixie.edu/programs/minor_in_digital_design))
- Minor in Information Technology ([catalog.dixie.edu/programs/minor\\_in\\_information\\_technology](http://catalog.dixie.edu/programs/minor_in_information_technology))
- Minor in Web Design & Development ([catalog.dixie.edu/programs/minor\\_in\\_web\\_design\\_development](http://catalog.dixie.edu/programs/minor_in_web_design_development))

### Certificates

- Visual Technologies Certificate ([catalog.dixie.edu/programs/computerinformationtechnology/visual\\_technologies\\_certificate](http://catalog.dixie.edu/programs/computerinformationtechnology/visual_technologies_certificate))

## Admission Requirements

Incoming students will be placed in pre-program designations CIT-P or CS-P until they have completed the requirements below with a 2.5 or higher GPA. When students have completed the program admission requirements, they will meet with a CIT advisor to be officially accepted into the program.

### Bachelor of Science in Computer & Information Technology (no emphasis)

|           |                                                           |   |
|-----------|-----------------------------------------------------------|---|
| CS 1400   | Fundamentals of Programming                               | 3 |
| CS 1410   | Object Oriented Programming                               | 3 |
| DES 1300  | Design I                                                  | 3 |
| IT 1100   | Introduction to Unix/Linux                                | 3 |
| MATH 1050 | College Algebra / Pre-Calculus (or higher GE MATH course) | 4 |
| WEB 1400  | Web Design I: Fundamentals                                | 3 |

### Bachelor of Science in Computer & Information Technology - Digital Design Emphasis

|          |                             |   |
|----------|-----------------------------|---|
| DES 1300 | Design I                    | 3 |
| CS 1400  | Fundamentals of Programming | 3 |
| DES 2300 | Design II                   | 3 |
| DES 2600 | Creative Imaging            | 3 |

|                                                                                                             |                                                |   |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------|---|
| DES 2800                                                                                                    | Digital Publishing                             | 3 |
| WEB 1400                                                                                                    | Web Design I: Fundamentals                     | 3 |
| <b>Bachelor of Science in Computer &amp; Information Technology - Information Technology Emphasis</b>       |                                                |   |
| CS 1400                                                                                                     | Fundamentals of Programming                    | 3 |
| CS 1410                                                                                                     | Object Oriented Programming                    | 3 |
| or MATH 1100                                                                                                | Business Calculus                              |   |
| IT 1100                                                                                                     | Introduction to Unix/Linux                     | 3 |
| IT 1200                                                                                                     | A+ Computer Hardware/Windows OS                | 3 |
| IT 2400                                                                                                     | Intro to Networking                            | 3 |
| WEB 1400                                                                                                    | Web Design I: Fundamentals                     | 3 |
| <b>Bachelor of Science in Computer &amp; Information Technology - Software Development Emphasis</b>         |                                                |   |
| CS 1400                                                                                                     | Fundamentals of Programming                    | 3 |
| CS 1410                                                                                                     | Object Oriented Programming                    | 3 |
| CS 2420                                                                                                     | Introduction to Algorithms and Data Structures | 3 |
| IT 1100                                                                                                     | Introduction to Unix/Linux                     | 3 |
| MATH 1060                                                                                                   | Trigonometry (or higher GE MATH course)        | 3 |
| WEB 1400                                                                                                    | Web Design I: Fundamentals                     | 3 |
| <b>Bachelor of Science in Computer &amp; Information Technology - Web Design &amp; Development Emphasis</b> |                                                |   |
| CS 1400                                                                                                     | Fundamentals of Programming                    | 3 |
| DES 1300                                                                                                    | Design I                                       | 3 |
| IT 1100                                                                                                     | Introduction to Unix/Linux                     | 3 |
| WEB 1400                                                                                                    | Web Design I: Fundamentals                     | 3 |
| <b>Bachelor of Science in Computer Science</b>                                                              |                                                |   |
| CS 1400                                                                                                     | Fundamentals of Programming                    | 3 |
| CS 1410                                                                                                     | Object Oriented Programming                    | 3 |
| CS 2420                                                                                                     | Introduction to Algorithms and Data Structures | 3 |
| MATH 1210                                                                                                   | Calculus I (or higher GE MATH course)          | 4 |

1. Analyze a problem, and identify and define the technological requirements appropriate to its solution.

*Mapped to Core Theme 1.3, 2.3, 3.3*

Students will demonstrate the ability to identify a problem, then analyze and prepare a solution essential to successful problem solving. Students will exhibit the ability to synthesize multiple sources of information to solve problems, and use one's experiences and other sources of information to create new insights and generate better problem solving approaches.

2. Design, implement, or evaluate a system, process, component, or program to meet desired needs.

*Mapped to Core Theme 1.3, 1.4, 2.3, 3.3*

Students will demonstrate the ability to specify, design, and implement software and/or hardware-software systems to meet project requirements. Students will have the ability to employ modern computer languages, environments, and platforms in such tasks; and the ability to apply appropriate design principles for effective print, online, or UI/UX delivery.

3. Use current techniques, skills, and tools necessary for professional practice.

*Mapped to Core Theme 1.3, 2.3, 3.3*

Technology is always changing and improving. It is important to stay current with best practices in this field. Students will demonstrate life-long learning skills, which will allow successful adaptation to the changing environment and evolving technologies throughout their professional career. Students will facilitate this process by fostering intellectual curiosity and the ability to access information from diverse sources as well as relating knowledge to daily life and defining issues within larger contexts.

4. Explain professional, ethical, legal, security and social issues and responsibilities.

*Mapped to Core Theme 1.4, 2.1, 2.2, 3.2*

Students will demonstrate an awareness and an understanding of these issues as they apply to digital content. Students will be able to articulate and integrate relevant ethical, legal, social, and security concerns into their projects. Students will exhibit openness to ideas different from or in conflict with one's own, including those rooted in different cultures, and awareness of societal and institutional factors influencing assumptions, prejudices, and privileges.

5. Function effectively in teams.

*Mapped to Core Theme 1.3, 1.4, 2.1, 2.3, 3.1*

Students will demonstrate the ability to function effectively in teams to accomplish stated goals. Students will manifest advanced skills in problem solving, positive work ethic, effective use of technology, and understanding team-centric workplace culture. Students will exhibit improved social behavior and competent professional skills to obtain and maintain successful employment within an organization, business, or other entity.

6. Communicate effectively visually, orally and in writing.

*Mapped to Core Theme 1.1, 1.2, 1.4, 2.3, 3.1, 3.2*

Students will demonstrate convincing technical communication skills, both orally and in writing. Students will exhibit the ability to be useful team members, capable of working in groups on strategic problems.

7. Employment.

*Mapped to Core Theme 1.3, 1.4, 2.3, 3.1, 3.3*

The best outcome is a career in a student's chosen field of interest, using their chosen degree. Students will prepare to effectively engage in the professional world. Students will demonstrate ability to apply acquired knowledge to practical employment skills that contribute to the success of organizations and businesses. Students will identify meaningful career options and different professional roles, and to build the skills, abilities and knowledge required to flourish in a changing job market.

## CIT Career Information

### Career Strategies

In addition to the required coursework in CIT, students can do the following to enhance their career opportunities:

- Develop strong interpersonal, communication and teamwork skills
- Patience and perseverance are essential for computer science professionals
- Obtain an internship; related experience is valuable
- Expect to work extended and/or irregular hours at times
- Prepare to learn new information on a regular basis through online discussions, classes, conferences, periodicals, and update your skills accordingly
- Obtain vendor-specific or networking certifications to gain a competitive edge for some positions

### Career Opportunities \*

Careers will vary according to the course of study but can include:

- Network Engineers
- Database Administrators
- Computer Security Specialists
- Web Developers
- Software Engineers
- Computer Security Specialists
- Graphic Designers
- Multimedia Artists
- Animators
- Software Developers

### Job Outlook \*

The overall employment projections from 2014 to 2024 show CIT will increase by 12%, a significantly faster pace than the average for all occupations.

### Salary Range \*

The median wage for computer and information technology occupations was \$81,430 in May 2015.

## Computer Science Career Information

### Career Strategies

In addition to the required coursework in computer science, students can do the following to enhance their career opportunities:

- Develop strong interpersonal, communication and teamwork skills.
- Develop patience and perseverance
- Obtain an internship. Related experience is helpful.
- Prepare to learn new information on a regular basis through online discussions, classes, conferences, periodicals, etc.

## Career Opportunities \*

The Computer Science degree at Dixie State University is designed to meet the national Accreditation Board for Engineering and Technology (ABET) accreditation standards. The CS degree will also prepare students for advanced degrees.

Demand for computer software engineers will increase as computer networking continues to grow. For example, expanding internet technologies have spurred demand for computer software engineers who can develop Internet, intranet, and World Wide Web applications. Likewise, electronic data-processing systems in business, telecommunications, healthcare, government, and other settings continue to become more sophisticated and complex. Implementing, safeguarding, and updating computer systems and resolving problems will fuel the demand for growing numbers of systems software engineers.

Some of the jobs in this area include:

- Computer Scientists
- Software Engineers
- Computer Programmers
- Computer Security Specialists
- Web Developers
- Software Developers

## Job Outlook \*

Employment of software developers is projected to grow much faster than the average for all occupations, increasing by 17% from 2014 to 2024. Job prospects will be best for applicants with a bachelor's or higher degree and relevant experience.

## Salary Range \*

As of May 2015, the median wage for software developers is \$100,690, and that of computer programmers is \$79,530.

\* Derived from the Occupational Outlook Handbook, 2015.