

## **Computing and Digital Technologies (CDT) Minor Program Description**

### **Overview**

The Computing and Digital Technologies (CDT) minor is a blended program cutting across the Colleges of Arts & Letters and Engineering. Key departments in Arts & Letters have partnered with Computer Science & Engineering to offer a unique interdisciplinary minor. Program students will take CDT courses in both colleges to enhance their technical skills and increase their understanding of the ways in which technology can contribute to both personal and professional life. CDT will enrich the liberal arts educations of program students, broaden their perspectives, and give them skills and experience that prospective employers will value tremendously.

### **Program requirements**

The Computing and Digital Technologies (CDT) minor requires five, 3-credit courses including:

- A two-semester core course sequence in programming, and
- Three additional elective courses from one or more of the sub-specialties listed below.

### **Required Core Courses**

All program students are required to complete the two semester (Fall-Spring) core course sequence in the Python programming language. These courses will be offered every year by a faculty member in the Department of Computer Science and Engineering. The core sequence does not assume any prior background in programming and is intended to be an introductory experience for non-engineering students. Ideally, CDT students will complete the core sequences first before taking specialization courses, but that may not be possible or necessary in all cases.

### **Elective Specialty Courses**

The CDT elective courses are organized into six categories reflecting the diversity of disciplines within the College of Arts and Letters along with areas of technology expertise that are attractive to potential employers. Program students are encouraged to view these categories as sub-specialty tracks within the minor and to gain depth by taking all of their elective courses in a single track. While specialization is not required, students must take at least two (2) courses in a track to earn a specialization in that area.

### **Courses With and Without Computational or Digital Focus**

Most CDT courses have a significant computational or digital focus that involves student learning/use of technology. However, some may not, instead providing background information that is highly relevant to the particular specialty in question. In those courses without a computational/digital focus, CDT students are encouraged to take advantage of any project or paper requirements in the class to reflect on how computational methods or technology can be brought to bear on the subject matter of the course. CDT students are limited to only one course without computational/digital focus in any specialization track. If a student earns a specialization in a track with only two courses, both must have a computational/digital focus.

Classes with and without computational/digital focus in each track are shown where applicable on the Courses pages.

### CDT Specialty Tracks

- *User Interface and Experience*. This track allows students to focus on how technology systems should be designed to enhance and maximize the user experience.
- *Cyber Safety and Security*. This track allows students to focus on the vulnerabilities, threats, protections, investigations and legalities associated with technology systems.
- *Digital Humanities*. This track allows students to focus on the ways in which technology can assist in the analysis and understanding of literature and textual information.
- *Digital Arts*. This track allows students to focus on how technology can assist in the creation and display of artistic expression.
- *Cognitive Science*. This track allows students to focus on the important role technology plays in the growing field of cognitive science.
- *Technology Development and Management*. This track allows students to focus on the ways in which technology solutions can be developed, implemented, managed, and maintained in organizations.

### Requirement Completion Options

To complete CDT, a student must take five (5) courses total including:

- Two (2) core programming courses taken in sequence; and
- Three (3) elective specialty courses taken in one of the following five configurations:
  1. Three (3) courses with computational/digital focus in one track (earns track specialization); or
  2. Two (2) courses with computational/digital focus in one track and one (1) without computational/digital focus in same track (earns track specialization); or
  3. Two (2) courses with computational/digital focus in one track and one (1) with or without computational/digital focus in another track (earns track specialization); or
  4. One (1) course with computational/digital focus in each of three different tracks (does not earn track specialization); or
  5. One (1) course with computational/digital focus in each of two different tracks and one (1) without computational/digital focus in any track (does not earn track specialization).

NOTE: Fewer than three (3) specialty courses or fewer than two (2) courses with computational/digital focus will NOT fulfill CDT requirements.

### **Program Course Options**

#### Course Availability

All courses listed below are cross-listed in other departments or programs on campus. In most cases, CDT will have a limited number of seats in these courses in any particular semester.

Students should keep this limited availability in mind when planning their CDT course schedules.

### Specialty Courses May Change

The particular courses shown below for each track may change over time as other relevant classes are identified and approved or as new courses emerge. The list will remain fluid so as to accommodate new developments or changes within the departments/programs that are partnering with CDT to offer this unique interdisciplinary minor.

### Prerequisites

Note that some CDT specialty courses may have prerequisites within the sponsoring departments or programs. In that case, CDT students are responsible for satisfying any necessary prerequisites in advance of taking those courses. Prerequisite courses may be outside of CDT requirements and in those cases students will need to take them as non-CDT electives.

### Courses With and Without Computational or Digital Focus

As noted above, most, but not all CDT courses will have a significant computational or digital focus that involves student learning/use of technology. CDT students are limited to only one specialty course without such computational/digital focus. Courses of both types are clearly designated below for each track when applicable.

### Required Core Courses

- CDT 30010 Script Based Programming 1 (CSE 10101)
- CDT 30020 Script Based Programming 2 (CSE 10102)

### Specialty Track: User Interface and Experience

This track allows students to focus on how technology systems should be designed to enhance and maximize the user experience.

#### *Course options with computational/digital focus:*

- CDT 30110 Web Design (DESN 21120 )
- CDT 30120 Digital Solid Modeling (DESN 31209)
- CDT 30130 Rapid Prototyping (DESN 31212)
- CDT 31140 Visual Communication/Interaction Design (DESN 31140)
- CDT 31140 Human-Computer Interaction (PSY 40676/CSE 40424)
- CDT 31150 Video Game Design (CAPP 30390)

### Specialty Track: Cyber Safety and Security

This track allows students to focus on the vulnerabilities, threats, protections, investigations, and legalities associated with technology systems.

#### *Course options with computational/digital focus:*

- CDT 40200 Information Security (CAPP 40260)
- CDT 40210 Digital and Forensic Psychology (CAPP 40620)
- CDT 40220 Cybercrime and the Law (CAPP 40620)
- CDT 43210 Forensic Psychology Seminar (PSY ?????)

### Specialty Track: Digital Humanities

This track allows students to focus on the ways in which technology can assist in the analysis and understanding of literature and textual information.

*Course options with computational/digital focus:*

- CDT 30300 Digital Humanities (new course to be offered in ENGL)
- CDT 30310 Topics in Quantitative Literary Studies (new course to be offered in ENGL)

*Course options without computational/digital focus (only one is allowed):*

- CDT 30320 Technologies of the American Novel (ENGL 13186)

### Specialty Track: Digital Arts

This track allows students to focus on how technology can assist in the creation and display of artistic expression.

*Course options with computational/digital focus:*

- CDT 31410 Intro to Graphic Design (DESN 21101)
- CDT 31420 Photography 1 (ARST 21401)
- CDT 31430 Extreme Photography (ARST 31402)
- CDT 31440 Moving Pictures: An Introduction to Video and Sound (ARST 31403)
- CDT 40410 Music Through Technology (CAPP40553/MUS 40500)
- CDT 30410 3D Digital Production for Animation and Video Games (FTT 30416)
- CDT 40420 Advanced 3D Digital Production (FTT 40416)
- CDT 30420 Sound and Music Design for Digital Media (FTT 30420)
- CDT 30430 Internet TV Production (FTT 30407)
- CDT 40430 Technological Concepts in Visual FX (CSE 40655)

### Cognitive Science

This track allows students to focus on the important role technology plays in the growing field of cognitive science.

*Course options with computational/digital focus:*

- CDT 40510 Artificial Intelligence (PSY 40675/CSE 40171)
- CDT 31140 Human-Computer Interaction (PSY 40676)

*Course options without computational/digital focus (only one is allowed):*

- CDT 30510 Introduction to Cognitive Neuroscience (PSY 30520)
- CDT 40530 Digital Technology, Society, and Ethics (CAPP 40160)
- CDT 43510 Philosophy of Mind (Phil 43901)
- CDT 43520 Natural Language Semantics (PHIL 43916)

### Technology Development and Management

This track allows students to focus in the ways in which technology solutions can be developed, implemented, managed, and maintained in organizations.

*Course options with computational/digital focus:*

- CDT 40610 Case Studies in Computing-Based Entrepreneurship (CSE 40923)
- CDT 40620 Software Development and Management (new CDT course)

*Course options without computational/digital focus (only one is allowed):*

- CDT 40630 Ethical and Professional Issues (CSE 40175)
- CDT 40530 Digital Technology, Society, and Ethics (CAPP 40160)