

MT513-51 Computer Science Principles for High School Teachers Summer 2015

INSTRUCTOR

Dr. Linda Seiter

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Google Hangout Office Hours:

Sun, Mon, Tue, Wed, Thu 7-9pm. Invite lseiter@jcu.edu.

COURSE DESCRIPTION

The new AP Computer Science Principles course will launch in Fall 2016. AP Computer Science Principles (AP CSP) offers a multidisciplinary approach to teaching the underlying principles of computation. The course will introduce students to the creative aspects of programming, using abstractions and algorithms, working with large data sets, understandings of the Internet and issues of cybersecurity, and impacts of computing that affect different populations. AP CSP will give students the opportunity to use current technologies to solve problems and create meaningful computational artifacts. Together, these aspects of the course make up a rigorous and rich curriculum that aims to broaden participation in computer science. AP CSP will encourage students to be both analytical and creative in their thinking, and to collaborate with their peers to investigate solutions to real-world issues using computing. Students who succeed in AP Computer Science Principles will be better prepared in college and career, with a thorough grasp of computing foundations and concepts.

MT513 - Computer Science Principles for High School Teachers is designed to introduce the Computer Science Principles curriculum framework. The framework consists of 7 **Computational Thinking Practices** which capture important aspects of the work that computer scientists engage in at the level of competence expected of AP CSP students. The major areas of study in the course are organized around 7 **Big Ideas** which encompass ideas foundational to studying computer science.

Computational Thinking Practices	Big Ideas
<ol style="list-style-type: none">1. Connecting computing2. Creating computational artifacts3. Abstracting4. Analyzing problems and artifacts5. Communicating6. Collaborating	<ol style="list-style-type: none">1. Creativity2. Abstraction3. Data and Information4. Algorithms5. Programming6. The Internet7. Global Impact

MT513 will introduce the computational thinking practices and big ideas through the development of software animations and simulations using the Scratch programming language. Scratch is a free, simple-to-learn, yet powerful programming language developed by the Lifelong Kindergarten Group at MIT's Media Lab. The Scratch website allows students, teachers and anyone to share their projects.

REQUIRED TEXT

We will use online material.

COMMUNICATION POLICY

The Canvas course management system will contain course documents, homework assignments, course communication, etc. Update your Canvas notification settings to receive immediate notifications for course information such as homework updates or clarification. Canvas is available at <http://canvas.jcu.edu>

GRADING

Grades are computed as follows:

Homework Assignments:	50%
Online Portfolio	10%
Course Project:	40%

This course is entirely online; all lesson material will be available through the course web site. Each lesson is taught tutorial style, and will typically include the interactive development of one or more programs, followed by hands-on experimentation in the form of various challenges. There will be homework assignments that extend the lesson learning experiences. You will maintain an online portfolio that documents the example programs that you develop as part of each lesson as well as the homework. Your portfolio will also include a blog where you can discuss the readings and your programming experiences.

For the course project you will develop a programming lesson, assignment and assessment that can be used by middle or high school teachers to teach a particular topic in mathematics. The choice of topic is up to you.

ADDITIONAL POLICIES

1. Policy on Documentation and Accommodation of Disabilities:

In accordance with federal law, if you have a documented disability (learning, psychological, sensory, physical, or medical) you may be eligible to request accommodations from the Office of Services for Students with Disabilities (SSD). To make a request for accommodations, please contact SSD Director Allison West at (216) 397-4967 or visit the SSD office, located in Room 7A, on the garden (lower) level of the Administration Building. Please keep in mind that accommodations are not retroactive so it is best to register with SSD at the beginning of each semester. Only those accommodations approved by SSD will be recognized by your instructors. Please contact SSD if you have further questions.

2. Policy on Academic Honesty:

Unless stated otherwise, homework assignments are to be done individually. It is acceptable to discuss the examples we cover in class and those found in the textbook with other students. However, you are not allowed to share or discuss any part of your homework solution with other students. You will receive a grade of 0 if you collaborate with another student on a homework assignment.

Academic honesty, expected of every student, is essential to the process of education and to upholding high ethical standards. Cheating, including plagiarism, inappropriate use of technology, or any other kind of unethical behavior, may subject the student to severe academic penalties, including dismissal.

Concerns about the propriety of obtaining outside assistance and acknowledging sources should be addressed to the instructor of the course before the work commences and as necessary as the work proceeds.

3. Policy on Mutual Respect:

John Carroll University is committed to fostering ethical and moral values that are consistent with Jesuit and Catholic traditions. Among the central values of the University are the inherent dignities of every individual as well as the right of each person to hold and to express his or her viewpoint. When these views conflict it is the obligation of members of the community to respect other perspectives.

The University welcomes students, faculty, staff, and visitors from diverse backgrounds and it works to ensure that they will find the University environment free of discriminatory conduct. It is unacceptable and a violation of University policy to harass, abuse, or discriminate against any person because of age, race, gender, ethnicity, sexual orientation, religion, or disability.

Furthermore, each member of the JCU community is expected to take an active role in fostering an appreciation for diversity and inclusion and sending the message that bias-related acts will not be tolerated. "Bias" is defined as intentional or unintentional actions targeting a person because of a real or perceived aspect of that person's identity, including (though not limited to) age, gender, religion, race, ethnicity, nationality, sexual orientation, gender identity, or (dis)ability.

All bias incidents, including those occurring in the classroom, should be reported using the JCU Bias Reporting System at <http://sites.jcu.edu/bias/>.

Questions about the Bias Reporting System or bias incidents may be directed to Dr. Terry Mills, Assistant Provost for Diversity and Inclusion, at tmills@jcu.edu or (216) 397-4455. For more information about University policies and community standards for appropriate conduct, please refer to the Dean of Students web page at <http://sites.jcu.edu/deanofstudents>. For more information about the University commitment to diversity and inclusion, please see <http://sites.jcu.edu/diversity>.