

**Syllabus**  
**Programming Concepts for Educators**  
**EDCT 521**

Meets face-to-face on Sept 12, Oct 10, Nov 15 (8:30am-12:30pm)

**Fall 2009**

**CONTACT INFORMATION:**

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**COURSE MATERIALS:**

Software: 1) Macromedia Flash 8 or more recent, 2) Scratch (download at <http://scratch.mit.edu/download>)

Online Course Component: This course is a hybrid course that meets face-to-face on only three occasions. The rest of the course is conducted through the Blackboard course. Students are expected to login and check the course Blackboard site several times throughout the week.

**COURSE DESCRIPTION:**

This course introduces students to the basic logic in computing. Flash and Actionscript will be used to design thematic/integrated lessons using to demonstrate programming technics. Students will construct assignments in Flash and will work independently through the tutorials. Each face-to-face class session will be in a seminar format. The topics for the face-to-face seminars will be 1) basic programming, 2) interactive game principles, 3) programming in the classroom.

**COURSE OBJECTIVES:**

- Demonstrate knowledge and skill of the Flash authoring system.
- Demonstrate knowledge of Scratch
- Demonstrate knowledge of basic programming principles
- Demonstrate knowledge of interactive game principles
- Demonstrate knowledge of usage of programming in the classroom
- Demonstrate proficiency in independently learning complex, unfamiliar software packages.

**COE DISPOSITIONS**

See project write up

## **ISTE TECHNOLOGY FACILITATOR STANDARDS:**

### **TF-I.**

#### **Technology Operations and Concepts**

Educational technology facilitators demonstrate an in-depth understanding of technology operations and concepts. Educational technology facilitators:

#### **A.**

Demonstrate knowledge, skills, and understanding of concepts related to technology (as described in the ISTE National Educational Technology Standards for Teachers). Candidates:

1. assist teachers in the ongoing development of knowledge, skills, and understanding of technology systems, resources, and services that are aligned with district and state technology plans.
2. provide assistance to teachers in identifying technology systems, resources, and services to meet specific learning needs.

#### **B.**

Demonstrate continual growth in technology knowledge and skills to stay abreast of current and emerging technologies. Candidates:

1. Model appropriate strategies essential to continued growth and development of the understanding of technology operations and concepts.

### **TF-V.**

#### **Productivity and Professional Practice**

Educational technology facilitators apply technology to enhance and improve personal productivity and professional practice. Educational technology facilitators:

- A. Use technology resources to engage in ongoing professional development and lifelong learning. Candidates:
  1. identify resources and participate in professional development activities and professional technology organizations to support ongoing professional growth related to technology.
  2. disseminate information on district-wide policies for the professional growth opportunities for staff, faculty, and administrators.
- B. Continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning. Candidates:
  1. continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning.
- C. Apply technology to increase productivity. Candidates:
  1. model advanced features of word processing, desktop publishing, graphics programs, and utilities to develop professional products.
  2. assist others in locating, selecting, capturing, and integrating video and digital images in various formats for use in presentations, publications, and/or other products.

3. demonstrate the use of specific-purpose electronic devices (such as graphic calculators, language translators, scientific probeware, or electronic thesaurus) in content areas.
  4. use a variety of distance learning systems and use at least one to support personal/professional development.
  5. use instructional design principles to develop hypermedia and multimedia products to support personal and professional development.
  6. select appropriate tools for communicating concepts, conducting research, and solving problems for an intended audience and purpose.
  7. use examples of emerging programming, authoring or problem-solving environments that support personal/professional development.
  8. set and manipulate preferences, defaults, and other selectable features of operating systems and productivity tool programs commonly found in PK-12 schools.
- D. Use technology to communicate and collaborate with peers, parents, and the larger community to nurture student learning. Candidates:
1. model the use of telecommunications tools and resources for information sharing, remote information access, and multimedia/hypermedia publishing in order to nurture student learning.
  2. communicate with colleagues and discuss current research to support instruction, using applications including electronic mail, online conferencing, and Web browsers.
  3. participate in online collaborative curricular projects and team activities to build bodies of knowledge around specific topics.
  4. design, develop, and maintain Web pages and sites that support communication between the school and community.

## COURSE SCHEDULE

	<b>Goals</b>	<b>Readings/lecture</b>	<b>Due</b>
<b>Week 1: face-to-face</b>	<b>Re-introduction to Flash environment</b>	<b>Moore (2009) and Moore online tutorials</b>	<b>Assignment 1: Flash Demo</b>
<b>Week 2: Online*</b>	<b>Variables, randomization</b>	<b>Actionscript: coin toss example</b>	<b>Assignment 2: Rolling Dice</b>
<b>Week 3: Online*</b>	<b>Basic movement, loops (for, switch-case), hit detection</b>	<b>Actionscript: hit detection example</b>	<b>Assignment 3: Hit detection</b>
<b>Week 4: Online*</b>	<b>Advanced movement, interaction, conditionals, trigonometry</b>	<b>Actionscript: Bouncing ball example</b>	<b>Assignment 4: Pong single player</b>
<b>Week 5: face-to-face</b>	<b>Alternate programming environments, midterm exam</b>	<b>Scratch, practice exam</b>	<b>Midterm exam</b>
<b>Week 6: Online*</b>	<b>Working with data, arrays</b>	<b>Scratch notes</b>	<b>Assignment 5: Scratch Project proposal</b>
<b>Week 7: Online*</b>	<b>Designing Instructional Games</b>	<b>Games notes</b>	<b>Assignment 6: Full pong</b>

<b>Week 8: Online*</b>	<b>Miscellaneous programming concepts</b>	<b>Actionscript: Frogger example</b>	<b>Assignment 7: Application design</b>
<b>Week 9: Online*</b>	<b>Programming in the classroom: Logo</b>	<b>Actionscript: Racing, Logo Notes</b>	<b>Assignment 8: Racing, project outline due</b>
<b>Week 10: face-to-face</b>	<b>Programming in the classroom, User tests, Final exam</b>	<b>Programming lesson plans</b>	<b>Final exam</b>
<b>Finals week</b>			<b>Project or Paper due</b>

\* online discussion through adobe connect will be scheduled first day of class (1 hour each week)

### **COURSE PROJECT:**

The project is divided into three stages.

- 1) 1 page project proposal (single spaced) 5%
- 2) Project Explanation 10 % - A
  - 5 page paper that:
    - a. Provides a rationale for the project
    - b. describes specific learning objectives,
    - c. How you have designed your application to meet our professional dispositions (Social justice, ethics, well-being of students, families, communities, professional competence) \* reviewed first day of class
    - d. research base –where did you get help, ideas
    - e. response to user trials
- 5) Final Project 10 %

OR

Research paper

### **COURSE POLICIES:**

*Academic dishonesty is defined in the student handbook. If you are found to be involved in academic dishonesty or academic misconduct you will be referred to Judiciaries. Exams, and projects required for this course must represent your individual work.*

### **Assignments/EVALUATION:**

Final Exam: The final exam will focus on seminar material and Flash elements. The final exam is comprehensive.	20%	Final Week
Midterm	5%	Midterm week - content based

Online Group Discussions participation and summary	10%	Throughout the term
Programming assignments	40%	Through out the term (5% each)
Individual Computer-based game project	30%	Finals week
Final Exam	15%	Final - project based

**GRADES:**

**Letter Grade Percentile**

A	94%
A-	90%
B+	87%
B	84%
B-	80%
C+	77%
C	74%
C-	70%
D+	65%
D	60%
F	59% & Below

**ATTENDANCE:**

Your active involvement--individually, in small groups, and with the entire class--is an important way for you to help meet the course objectives. For you to be involved, you must be present for the face-to-face seminars. If you are now aware of attendance conflicts or should you become aware of such conflicts, please let me know of them as soon as possible. Active attendance is required for the participation portion of your grade.

**SYLLABUS CHANGE POLICY:**

This syllabus is a guide for the course and is subject to change with advanced notice.