

4002-330
Interactive Digital Media
Fall 20041 Course Syllabus

The information presented in this syllabus is subject to expansion, change, or adjustment during the quarter.

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Teaching Assistant: Name: TBD	Office Hours: TBD
Course Web Page: http://polaris.it.rit.edu/~idm	FirstClass Conference: Bogaard_330-70

Course Text and Materials

- Required text: **Visual Quickstart Guide: Macromedia Flash MX 2004**. Katherine Ulrich, Peachpit Press, 2004.
- Recommended text: **Flash MX 2004 Actionscript Bible**. Robert Reinhardt, Wiley, 2004. (Highly recommended. Available on Books 24x7.)
- Additional readings will be provided as handouts or web URLs.

Important RIT Deadlines

Last day of add/drop is **Monday, September 13, 2004**.

Last day to withdraw with a grade of "W" is **Friday, October 15, 2004**. The deadline for withdrawing from a course with a W grade is the end of the 6th week of the quarter. Forms may be obtained from your department office and need your instructor's signature. The completed forms should be returned no later than October 15, 2004.

NOTE: IT department policy states that a student has one quarter to **challenge** any **grade**. After that, grades cannot be challenged.

Course Description

This course introduces an event-driven scripting environment to enable the development of highly interactive user experiences. Students will learn to manage and edit a wide variety of digital media types—still and motion graphics, 3D, text, audio, and video, for example—and write code to allow users to access, control, and manipulate each of these media types. Students will gain foundation skills in media asset creation and in prototyping for applications and interface development. Programming will be required.

Prerequisite Courses

4002-320 and 4002-218 or equivalent.

Course Goals and Objectives

General Course Goals

As digital media of all types become increasingly widespread and available, information technologists need a background in fundamental concepts of media and its interactive control. This course provides an overview of still and motion graphics, audio, video, 3D, and text, with an emphasis on using an event-driven scripting environment to provide interactive control. The course provides students with foundation skills in asset creation and prototyping for applications and interface development.

Specific Objectives (Learning Outcomes)

By the end of the course, students should be able to:

Using a multimedia development environment, program interactive user control of various media types, including graphics, text, animation, audio, video, and 3D. Assessed through programming projects and studio exercises.

Apply fundamental programming concepts in a scripting/rapid prototyping environment. Assessed through programming projects and studio exercises.

Implement object-oriented programming strategies that can scale from small to large-scale projects. Assessed through performance on projects and studio exercises.

Design and program modular, reusable, interface components. Assessed through performance on projects and studio exercises.

Select and process or create bitmap and vector graphics to balance file size with quality. Assessed through performance on projects and studio exercises.

Identify and describe animation principles and techniques, such as persistence of vision, timing, keyframes. Design and develop a simple animation and save it in an appropriate format. Assessed through performance on projects and exam questions.

Explain major digital audio concepts, such as frequency, sampling, bit depth, and data rate. Assessed through exam questions and studio exercises.

Explain major digital video concepts, such as time base, temporal and spatial compression, architectures, and file types. Assessed through exam questions and studio exercises.

Write code that creates a scene with 3D primitives, and use point of view is used to render models. Assessed through performance on projects.

Create a satisfying user experience by applying principles of visual and information design to interactive projects. Assessed through performance on projects.

Demonstrate media literacy by identifying effective and ineffective examples of interactive multimedia. Assessed through classroom participation and written group critiques of peer work.

Write documentation that articulates the goals and justifies the design decisions made in the development of an interactive project. Assessed through documentation of projects.

Prerequisite Skills

1. Write object-oriented programs that utilize basic programming concepts such as variables, scope, conditionals, iteration, modularity, and troubleshooting.
2. Identify and describe components of digital images, including file formats, resolution, color models, and compression methods.
3. Utilize digital imaging software (e.g. Photoshop and Fireworks) to create simple graphic elements.
4. Identify and implement basic principles of graphic design, including contrast, alignment, proximity, repetition, and effective use of color and type.
5. Identify and implement simple information design, including effective navigation components and organization of content.
6. Create web pages using valid XHTML and CSS, and transfer the files correctly to a server.

Role of this course in the Information Technology curriculum

This course is required for graduation in BS/IT, and contributes to the following program outcomes:

- Program effectively within the student's specialty area.
- Develop and evaluate effective user interaction designs.
- Design and implement a website using appropriate media to meet the needs of the user.
- Adhere to the ethical standards of the IT profession.

Course Organization

Projects

We will have three major projects during the quarter. These projects will build upon concepts covered in the class and in exercises, and are your opportunity to expand your understanding and apply creativity to the concepts learned.

Multimedia projects tend to be time-consuming, so plan to **get started early!**

Studio Exercises

Each week in class, you will have at least one exercise to do in a supported classroom environment. These exercises are designed to give you an opportunity to extend the concepts and principles you have encountered in class. They will form a solid foundation upon which you will develop your projects.

Make sure to save the files from your studio exercises and keep them in a "Studio Portfolio" disk or available online. From time to time I may ask to see your portfolio, so **always bring your portfolio disk to class, or make sure the files are accessible.**

Exams & Practicums

We will have short exams at least twice during the quarter. These will typically be given first thing in class that day. (Another reason to be on time!!) No make-up quizzes will be given.

A midterm and final practicum will be given in which you may demonstrate your mastery of the course material. For these practical exams, you will be given a task to accomplish on the computer. The practical exam is not designed to be extremely difficult, but it is mandatory. No make-up practicum will be given.

FirstClass

You are required to have a FirstClass account for course communications and for submission of those assignments that must be submitted as files to our FirstClass drop box. Please note that you can install a FirstClass client on your own PC that requires an Internet connection. Alternately, you can connect to the system in a web browser. The URL is **firstclass.it.rit.edu/login**

Course Topics

- Intro to course
- Flash environment
 - Drawing tools
 - Vector vs. Bitmap
 - Displaying text
 - Timeline and layers
 - Timeline animation
 - Character design
 - Animated sequences
 - Scripting window
 - Posting online
- Symbols
 - Movie clip
 - Graphic
 - Button
- Actionscript fundamentals
 - Event-driven interaction
 - Code-based animation
 - Object path syntax
 - Functions
 - Arrays
 - OOP design in Flash
- Media Literacy
 - Assessing quality of interactive applications
 - Effective critique techniques
- Interface elements: display and dynamic control
 - Buttons
 - Menus
 - Sliders
- Imported media
 - Text and string manipulation
 - Sound
 - Technical audio concepts
 - Simple audio editing
 - Audio playback and control in Flash
 - Video
 - Technical video concepts

- Simple video editing
 - Video display and control in Flash
- Intro to streaming media
- Keyboard control
- Detecting collisions
- Intro to Director
 - The Director environment and tools
 - Comparison of Flash and Director
 - Director and 3D
- Developing a 3D environment
 - 3D Coordinate systems
 - Primitives
 - Programming interactive control of 3D attributes
 - Grouping
 - Transformations
 - Scale
 - Rotation
 - Translation
 - Camera
 - Lights
 - Shaders and textures
 - Interactivity in three dimensions
 - Mouse and keyboard control
 - Integrating Flash interface elements

Grading

The grading scale used along with the grading criteria is as follows:

Component	Weight
Mini-Project 1: Animation	5
Mini-Project 2: Menus	5
Project 1: Dynamic Media Space	20
Project 2: Game	20
Project 3: 3-Dimensional World	20
Homework, ICEs, and Participation	10
Quizzes/Practicum	20

Range	Grade
$\geq 90.0\%$	A
$\geq 80.0\% \ \& \ < 90\%$	B
$\geq 70.0 \ \% \ \& \ < 80.0\%$	C
$\geq 60.0 \ \% \ \& \ < 70.0\%$	D
$< 60.0\%$	F

Course Schedule

Week	Topics	Activities	Readings
1	Intro to the course Intro to Flash: drawing and animation		VQ: Ch 1-5, 17
2	Actionscript coding Interface elements	Course web site due	VQ: Ch 6-11
3	Arrays Media import Audio	Animation Mini-project due	VQ: Ch 12-16 FAB: Ch 4, 5, 6
4	Video Media Literacy Effective critique techniques	Menu Mini-project PRACTICUM I	FAB: Ch 11-15, 23
5	Streaming media Video control, Sliders	MIDTERM EXAM Dynamic Media project prototype and group critique	FAB: 24, 34
6	Game design Collision detection	Dynamic Media Space project due	
7	OOP design in Flash animated sequences character design	Game project prototype and group critique	
8	Intro to Director 3D coordinate systems Primitives and Transformations Flash elements in Director	Game project due	
9	Groups Camera and Lights Shaders and textures		Handouts: Director Overview Director 3D
10	Programmatic control of 3D attributes Interactivity in three dimensions Mouse and keyboard control	PRACTICUM II FINAL EXAM 3D World project prototype and group critique	
11	Student Project Demos	3D World project due	

Cheating: Academic dishonesty is misrepresenting someone else's work as your own. Academic dishonesty is a serious matter, and can result in an automatic F for the course. Please review the IT department's policy on cheating, located online at <http://www.it.rit.edu/policies/dishonesty.html>.

If, during the quarter, you ever have any questions about what does or does not constitute academic dishonesty, please come and talk to me.

Finally...

Any or all of the previous information is subject to change or adjustment during the quarter.