



Video Game Programming ITP 380x (4 Units)

Instructor Contact Information	Instructor	Justin Verduyn
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	Grades	http://blackboard.usc.edu (login is your USC email and password)
	Office Hours	Tuesdays 11am - 5pm by appointment
	Office	OHE530F
	Open Lab	Mondays thru Thursdays from 9pm to 1am

Objective This course provides students with an introduction to the technology and software engineering practices used in the video game industry today. The course is lab-intensive, and students will learn-by-doing, performing a series of labs leading up to a final project (implementing a video game of their choice). The course is project-based and students are expected to learn some material by reading the book on their own, using the Microsoft documentation online, etc.

- Concepts**
- Graphics
 - Physics
 - User Interface
 - Resource Management
 - Networking
 - Sound
 - Artificial Intelligence
 - Scripting and More

Prerequisite an understanding of the Principles of Software Development (CS201)

Lecture 2 hrs/week

Lab 2 hrs/week

Required Textbook *XNA Game Studio Creators Guide* by Stephen Cawood and Pat McGee
ISBN: 007149071X

Course Reader available from blackboard

Optional Textbooks *Beginning C# Game Programming* by Ron Penton
ISBN: 1592005179
Chapters 1 – 5 are a good introduction to C#

Microsoft XNA Framework Class Library
<http://msdn2.microsoft.com/en-us/library/bb203940.aspx>

XNA Creators Club
<http://creators.xna.com>

Grading The following point structure will be used in determining the grade for the course. Final grade will be based upon the total points received, the highest total in the class, and the average of the class.

10 Homeworks	20%
10 Lab Projects	30%
Midterm (October 16 th)	20%
Final	30%

Policies Projects: It is the student's responsibility to turn in lab projects on or before deadlines as set by the instructor.
Late Projects: Rules for late project submission will be established by the instructor.

Academic Integrity

The use of unauthorized material, communication with fellow students during an examination, attempting to benefit from the work of another student, and similar behavior that defeats the intent of an examination or other class work is unacceptable to the University. It is often difficult to distinguish between a culpable act and inadvertent behavior resulting from the nervous tension accompanying examinations. When the instructor determines a violation has occurred, appropriate action, as determined by the instructor, will be taken.

Though working together is encouraged, the projects must be your own effort. "Duplicate" projects will all receive zero points and possible referral to the Office for Student Conduct.

All students should read, understand and abide by the University Student Conduct Code

<http://www.usc.edu/dept/publications/SCAMPUS/governance/gov03.html>

Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to your LA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Course Outline

Week 1

- Course Introduction
- XNA
- OO Review
- XNA Namespaces

Reading:

- *XNA Game Studio Creator's Guide*, Chapters 1, 2
- *Beginning C# Game Programming*, Chapters 1-5

Deliverables:

- NameSpaces, OO stuff, whatever on paper
- How to Submit Stuff (SVN and Blackboard)
- Software Setup
- get the ide to run some code and submit the blue screen to svn

Week 2

- empty project walkthrough
- game loop
- primitives
- color

Reading:

- *XNA Game Studio Creator's Guide*, Chapters 3, 9

Deliverables:

- build a triangle with colors for both the xbox and the pc
- extra credit: make the triangle cardinal and gold!

Week 3

- vectors, matrices
- math for rotations, scale, transform in 3d
- quaternion
- oo graphics

Reading:

- *XNA Game Studio Creator's Guide*, Chapters 5, 6, 13, 14

Deliverables:

- somehow transform the cube without user input
- extra credit: as it rotates, change the color

Week 4

- content pipeline
- fonts
- sprites
- input
- sound
- video

Reading:

- *XNA Game Studio Creator's Guide*, Chapters 7, 10, 21, 24

Deliverables:

- texturing the cube
- user input to transform the cube
- at least two transformations
- extra credit: have a transformation loop that keeps going until you press a on/off key
- extra credit: play a looping sound

Week 5

- 3d models
- textures / materials
- meshes
- game states

Reading:

- *XNA Game Studio Creator's Guide*, Chapter 12

Deliverables:

- give them a model of something basic
- import the model
- model transformations using user input
- game states: main menu (play the game, quit)
- play the game (pick your model from one of these two)
- playing the game (some key to go back to main menu)
- as a general extra credit, anytime they put their own models in, we'll give them a bonus
- extra credit: add a pause screen to playing the game

Week 6

- score tracking
- game statistics
- collision detection

Reading:

- *XNA Game Studio Creator's Guide*, Chapters 11, 16

Deliverables:

- add collision detection with a wall and an enemy model and a health potion model
- there will be a dozen enemies at the start
- collision with enemy will deduct player's health; and kill the enemy
- collision with health potion will increase health
- extra credit: enemies move around randomly

Week 7

- Midterm Review

Reading:

- None

Deliverables:

- add a score screen
- you have 30 seconds to kill as many enemies
- score is on how many enemies you kill
- if you are the highest scoring player, you get a "you win" screen
- extra credit: add a "enter your name" screen for the winner

Week 8 – Midterm

- Written Midterm - October 16th

Deliverables:

- None

Week 9

- Review Midterm
- Final Project Announcement
- Camera
- Lighting
- Skies
- Shaders

Reading:

- *XNA Game Studio Creator's Guide*, Chapters 4, 9, 15, 20

Deliverables:

- final project proposal
- add a camera to the world
- add at least one sun and sky to the world
- the models should show shadows
- extra credit: have the sun move across the sky as you play the game
- extra credit: have a pause state where you can move the camera around the world and everything is paused

Week 10

- Ballistics
- Particle Effects
- Keyframe Animations
- Animated Models

Reading:

- *XNA Game Studio Creator's Guide*, Chapters 17, 18, 19, 23

Deliverables:

- add a gun
- add explosions for when the monsters die
- monsters are animated as they move around
- extra credit: add some wild animation

Week 11

- Terrain
- Save/Load Game
- Multiple Levels

Reading:

- *XNA Game Studio Creator's Guide*, Chapters 22, 25

Deliverables:

- add terrain
- load it from disk
- save and resume the game state mid-game
- extra credit: add multiple levels

Week 12

- Multiplayer

Reading:

- *XNA Game Studio Creator's Guide*, Chapter 12

Deliverables:

- add split-screen multiplayer
- extra credit: as you win, your viewport shrinks

Week 13

- Final Project

Reading:

- None

Deliverables:

- Alphas of your Final Deliverables

Week 14

- Lab Time for Final Project

Reading:

- None

Deliverables:

- Betas of your Final Deliverables

Week 15

- Lab Time for Final Project

Reading:

- None

Deliverables:

- Feature Completes of your Final Deliverables

Week 16

- December 13 from 4:30 to 6:30 - final project due
- extra credit for turning it in by midnight on Friday of week 15 (last day of classes)

Deliverables:

- Website on ePortfolio.usc.edu
- Source Code
- Design Documents
- Presentation
- Playable Demo
- Demo Video