

COURSE SYLLABUS

COM103: Introduction to Game Programming

Course Description

This course will introduce the field of game programming, giving students a solid grasp of the concepts required to write a game. Students will learn and apply the basics of computer programming and key components including input, sound, and graphics, while developing a framework that will be applied in future game coursework.

General Course Information

Number of Units/Weeks	08/10
#Hours Lecture/#Hours Laboratory/#Hours Homework	60/40/120
Prerequisite(s)	None
Co-requisites (s)	None
Course Developer(s)	John Ramos, B.S.
Date Approved / Last Review	March 2010 / July 2016

Learning Outcomes

Upon successful completion of the course, students will be able to:

- Apply the fundamentals of computer programming such as variables, data types, sequence, selection and iteration
- Demonstrate 2D computer graphics using bitmaps and animated sprites
- Identify and incorporate device input commands including keyboard, and mouse, and controller
- Identify the game logistics of collision detection, object motion and finite state based programming
- Apply the fundamental theory of digital sound, file formats, effects commands and music playback commands
- Demonstrate 3D computer graphics theory using 3D object manipulation and animation

Instructional Methods Employed in this Course

- Lecture and Reading Assignments
- Hands-on Exercises and Labs
- Practical application of theory and skills in authentic Programming Projects
- Build on prior knowledge and experience of students to enhance richness of class activities

Information Resources for this Course



Textbook

Harbour, J. S. (2015). Beginning Game Programming (4th ed.). Boston: Course Technology.



Other Materials

Coleman College. The College Writer's Guide. San Diego: Coleman College, 2009.

Microsoft Visual Studio

<http://www.microsoft.com/visualstudio/en-us/>

Retrieved April 7, 2010

Table/Topics & Assignments

Types of Assignments:

Lecture -

Considered Lecture Hours

Classroom Discussion -

Considered Lecture Hours

In Class Critique -

Considered Lecture Hours

Delivering Oral Presentations -

Considered Lecture Hours

In Class (IC) Exercise -

Considered Lecture Hours

Reading -

Considered Homework (HW), work done outside of class

WebClass lesson (non-online courses) -

Considered Homework, work done outside of class

Lab Work -

Considered Lab Hours

Quiz, Midterm or Final -

Considered Lecture Hours

Week 1						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 1A	Computer Concepts & the IDE Program Definition, IPO, Algorithms	4				
LEC 1B	Program Components					

HW 1A	Read Lessons 1 – 2 (14 pages)	4		1.75		Week 2
Total Week 1		8	0	1.75	0	
Week 2						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 2A	Variables & Constants	2				
LEC 2B	Statements, Expressions & Operators	2				
LEC 2C	Selection: IF & SWITCH Statements	2				
LAB 2A	Lab Activity		6			
HW 2A	Read Lessons 3 – 5 (16 pages)			2		Week 3
Total Week 2		6	6	2	0	
Week 3						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 3A	Loops & Arrays	3				
LEC 3B	Using Functions	3				
LAB 3A	Lab Activity		2			
HW 3A	Program Set 1, Guessing Game			6	50	Week 4
HW 3B	Read Lessons 6 – 7 (15 pages)			1.9		Week 4
Total Week 3		6	2	7.9	50	
Week 4						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 4A	Windows & Game Programming Basics	2				
LEC 4B	Messaging & Event Handling	2				
LEC 4C	Real-Time Game Loop	2				
LAB 4A	Lab Activity		6			
HW 4A	Program Set 2: HelloWorld, WindowTest, GameLoop			4	30	Week 5

HW 4B	Reading Lessons 8-9, Chapters 1 – 2 (70 pages) Evaluated by HW 4C			8.75		Week 5
HW 4C	Review Questions: Chapter 1-2 (30 Questions)			2	20	Week 5
HW 5D	Midterm Discussion Questions: 45 questions			3	20	In Class
Total Week 4		6	6	14.75	70	
Week 5						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 5A	Direct3D	3				
LEC 5B	Bitmaps & Surfaces	3				
EXAM 5A	Midterm				150	In Class
LAB 5A	Lab Activity		2			
HW 5A	Program Set 3: D3d_Windowed, Create_Surface, Draw Bitmap			6	50	Week 6
HW 5B	Reading Lessons 10 -11, Chapters 3 – 4 (47 pages) Evaluated by HW 5C			5.9		Week 6
HW 5C	Review Questions: Chapter 3-4 (30 Questions)			2	20	Week 6
Total Week 5		6	2	16.9	220	
Week 6						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 6A	Input Devices	3				
IC EX 6A	Drawing & Animating Sprites	3				
LAB 6A	Lab Activity		6			
HW 6A	Program Set 4: XInput_Test, Bomb Catcher, Animate Sprite, Trans Sprite			14	90	Week 7
HW 6B	Reading Lessons 12 -13, Chapters 5 – 6 (85 pages) Evaluated by HW 6C			10.6		Week 7
HW 6C	Review Questions: Chapter 5-6			2	20	Week 7

	(30 Questions)					
Total Week 6		6	6	26.6	110	
Week 7						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 7A	Transforming Sprites	3				
LEC 7B	Detecting Sprite Collisions	3				
LAB 7A	Lab Activity		2			
HW 7A	Program Set 5: Rotate Animate, Rotate Scale, Collision			5.5	60	Week 8
HW 7B	Reading Lessons 14 -15, Chapters 7 – 8 (44 pages) Evaluated by HW 7C			5.5		Week 8
HW 7C	Review Questions: Chapter 7-8 (30 Questions)			2	20	Week 8
Total Week 7		6	2	13	80	
Week 8						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 8A	Printing	1				
LEC 8B	Scrolling the Background	2				
LEC 8C	Introduction to Audio	3				
LAB 8A	Lab Activity		6			
HW 8A	Program Set 6: Font Test, Tile –Based Static Scrolling, Bitmap Scrolling, Tile Dynamic Scrolling, Play Sound			8.5	100	Week 9
HW 8B	Reading Lessons 16 -18, Chapters 9 – 11 (68 pages) Evaluated by HW 8C			8.5		Week 9
HW 8C	Review Questions: Chapter 9-11 (45 Questions)			3	30	Week 9
Total Week 8		6	6	20	130	
Week 9						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 9A	3D Graphics	3				

	Fundamentals					
LEC 9B	Rendering 3D Model Files	3				
LAB 4A	Lab Activity		2			
HW 9A	Program Set 7: Textured_Cube,Stock_Mesh, Render Mesh			5	40	Week 10
HW 9B	Reading Lessons 19 -20, Chapters 12 – 13 (65 pages) Evaluated by HW 9C			8		Week 10
HW 9C	Review Questions: Chapter 12-13 (30 Questions)			2	20	Week 10
Total Week 9		6	2	15	60	
Week 10						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 10A	Course Wrap-Up	4				
LAB 2A	Lab Activity		8			
HW 10A	Program Set 8: Anti-Virus Game Integration			20	100	Week 10
HW 10B	Reading Lessons 16 -18, Chapters 9 – 11 (29 pages) Evaluated by HW 10D			3.6		Week 10
HW 10C	Review Questions: Chapter 14 (15 Questions)			1	10	Week 10
HW 10D	Final Discussion Questions: (41 questions)			3	20	Week 10
EXAM 10A	Final Exam				150	Week 10
Total Week 10		4	8	27.6	280	

Course Hours Summary

Week	Topic	LEC Hours	LAB Hours	HW Hours
1	Computer Concepts & the IDE, Program Definition, IPO, Algorithms, Program Components	8	0	1.75
2	Variables & Constants, Statements, Expressions & Operators, Selection: IF & SWITCH Statements	6	6	2
3	Loops & Arrays, Using Functions	6	2	7.9
4	Windows & Game Programming Basics, Messaging & Event Handling, Real-Time Game Loop	6	6	14.75
5	Direct3D, Bitmaps & Surfaces	6	2	16.9
6	Input Devices, Drawing & Animating Sprites	6	6	26.6
7	Transforming Sprites, Detecting Sprite Collisions	6	2	13
8	Printing, Scrolling the Background, Introduction to Audio	6	6	20
9	3D Graphics Fundamentals, Rendering 3D Model Files	6	2	15
10	Course Wrap-Up	4	8	27.6
Total		60	40	145.5

Table/Point Breakdown

Assignment	Possible Points	Percent of Grade
HW 3A, Program Set 1	50	5%
HW 4A, Program Set 2	30	3%
HW 4C, Review Questions	20	2%
EXAM 5A, Midterm Discussion Questions	150	15%
HW 5A, Program Set 3	50	5%
HW 5C, Review Questions	20	2%
HW 5D, Midterm Discussion Questions	20	2%
HW 6A, Program Set 4	90	9%
HW 6C, Review Questions	20	2%
HW 7A, Program Set 5	60	6%
HW 7C, Review Questions	20	2%
HW 8A, Program Set 6	100	10%
HW 8C, Review Questions	30	3%
HW 9A, Program Set 7	40	4%
HW 9C, Review Questions	20	2%
HW 10A, Program Set 8	100	10%
HW 10C, Review Questions	10	1%
HW 10D, Final Discussion Questions	20	2%
EXAM 10A, Final Exam	150	15%
Total	1000	100%

Your Grades for this Course

Your final grade for this course will be based on an assessment by the Instructor of your performance on a number of course activities, which may include objective tests, classroom exercises, laboratory demonstrations, project papers, or other types of activities. The chart below indicates in what activities you will engage, how many possible points can be earned for each activity, and the percentage of your final grade that will be accounted for by each activity.

Students in this course should be graded following Coleman University assessment practices and policies. A point system is used in the University to indicate student performance on various required activities or projects. For this course, it is recommended that points be distributed as follows:

Grading Structure

The following table lists the Coleman University grading structure. All grades listed will count as units attempted.

For each unit in which the student is enrolled, he or she will receive quality points as follows:

Letter Grade	Percentage	Grade Points
A	94% - 100%	4.00
A-	90% - 93%	3.67
B+	87% - 89%	3.33
B	84% - 86%	3.00
B-	80% - 83%	2.67
C+	77% - 79%	2.33
C	74% - 76%	2.00
C-	70% - 73%	1.67
D+	67% - 69%	1.33
D	64% - 66%	1.00
D-	60% - 63%	0.67
F	0% - 59%	0.00
I	N/A	0.00
W	N/A	0.00
CR	70% or above	0.00
NC	69% or below	0.00
AU	N/A	0.00
TR	N/A	0.00
WV	N/A	0.00

Note: I = Incomplete, W = Withdraw, CR = Credit, NC = No Credit, AU= Audit, TR= Transfer, WV= Course Waiver

Requirements

Assignments: All assignments (including projects, lab work, quizzes and exams) must be completed as scheduled. The following will apply to late assignments:

- 1-24 hours after due date = 20% off point value
- 25-48 hours after due date = 60% off point value
- 49+ hours after due date = No points given

If an assignment equals less than 5 points, no points will be given for late work. If there are extenuating circumstances, the student must submit a written explanation to the department Senior Instructor. Upon evaluation, points will be given according to the Senior Instructor's discretion.

Attendance: Classes begin and end as indicated in the published schedule. It is required that students be present at the beginning of each class session and stay until class is dismissed, including lab periods. Excessive tardiness, leaving early and/or absences (from either lecture or lab sessions) are causes for dismissal from the course. A student that arrives in class beyond 30 minutes late may be considered absent. A student that leaves over 30 minutes before the end of class may also be considered absent. Excused absences will be determined by the instructors and approved by the Dean of Academics & Director of Student Services. Students may be removed from the course(s) based on the following absence guidelines:

4 Unit Course – Allowed 2 absences per 10-week MOD (3rd absence may be excused by DOA & DOSS)

5 Unit Course – Allowed 2 absences per 5-week MOD (3rd absence may be excused by DOA & DOSS)

8 Unit Course – Allowed 5 absences per 10-week MOD (6th absence may be excused by DOA & DOSS)

Conduct: Students are expected to conduct themselves in a professional manner while on campus. Rules of conduct are outlined in the University Catalog and students are required to adhere to such policies. Students who are in violation of the Student Code of Conduct Policy can be suspended.

Coleman University Policy on Academic Dishonesty:

Academic dishonesty is cause for dismissal from Coleman University. Presenting another person's ideas, methods, course work, or test answers with the intention that they be taken as one's own is theft of a special kind. It defrauds the originator of the work, the institution, its graduates, its students, and its future students.

The student has full responsibility for the authenticity of all academic work and examinations submitted. A student who appears to have violated this policy must submit to a hearing with the reporting instructor and the associate dean. If it is determined that a violation occurred, the matter will be referred to an Officer of the University with recommendations for an appropriate penalty. The student may be dismissed, suspended, or given another penalty.

Coleman University employs the plagiarism software known as Turnitin. Students are expected to use this tool in an appropriate manner with the sole purpose to support their own academic endeavors at Coleman University. Turnitin account information cannot be shared with anyone. Contact your instructor if you have any questions about plagiarism related issues.

Academic Accommodation / Adjustment Policy:

In accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA), Coleman University offers accommodations to students with documented physical, psychological, and/or cognitive disabilities. Coleman University will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to offer equal educational opportunities to qualified disabled individuals.

To qualify for an academic accommodation under ADA, the student must provide adequate documentation of a disability. Students seeking academic accommodations should contact the campus ADA Coordinator, Ariana Marron, at 858-966-3953 or via email at ada@coleman.edu. The ADA Coordinator will review the documentation provided and verify ADA coverage. Students covered under ADA must meet with the ADA Coordinator at the beginning of every term to determine the appropriate academic accommodations. Failing to meet with the ADA Coordinator at the beginning of every term may impact the availability of accommodations.

After the academic accommodations have been determined, the students' instructors will be notified by the ADA Coordinator. If any problems or concerns regarding the provision of accommodations occur, the student must inform the ADA Coordinator. If the student feels accommodation is not being made appropriately, the student may follow the published Student Grievance Procedures.