

COURSE SYLLABUS

COM283: Introduction to 3D Game Programming with DirectX10

Course Description

This course introduces programming interactive computer graphics using DirectX10. The course is designed to give the student a deeper understanding of how vectors, matrices, and transformations are used in computer games. The student will also explore techniques for creating special effects, including reflections while learning new features such as geometry shaders and the rendering pipeline.

General Course Information

Number of Units/Weeks	04/10
#Hours Lecture/#Hours Laboratory/#Hours Homework	30/20/60
Prerequisite(s)	COM 203
Co-requisites (s)	None
Course Developer(s)	Sowmya Ganore MS, M.C.A.
Date Approved / Last Review	March 2010 / December 2012

Learning Outcomes

- Identify fundamental tasks in Direct3D such as initializing Direct3D, text and font rendering.
- Identify various stages of rendering pipeline.
- Apply mathematical concepts pertaining to Direct3D such as Vector algebra, matrix algebra.
- Apply shaders and effects by using HLSL (High Level Shader Language) and contrast vertex, pixel and geometry shaders.
- Apply mathematical concepts and transformations to define 3D geometry, set up cameras, light and texturing.

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

Luna, F. D. (2008). Introduction to 3D game programming with DirectX 10. Plano, Tex.: Wordware Pub..



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 HW, 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	Vector Algebra	3	--	--	--	
LAB 1A	Program	--	2	--	20	Week 2
HW 1A	Read: Chapters 1, Lesson 1 (25 pages) Evaluated by HW 1B	--	--	2.5	--	
HW 1B	Math Questions: Chapters 1 (6 Questions)	--	--	2	30	Week 2

Total Week 1		3	2	4.5	50	
Week 2						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 2A	Matrix Algebra	1	--	--	--	
LEC 2B	Transformations	2	--	--	--	
HW 2A	Read: Chapters 2 and 3, Lesson 2 and 3 (38 pages) Evaluated by HW 2B	--	--	3.8	--	
LAB 2A	Math Questions: Chapters 2 and 3 10 Questions	--	2	--	50	Week 3
Total Week 2		3	2	3.8	50	
Week 3						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 3A	Direct3D Initialization	3	--	--	--	
LAB 3A	Project 2	--	2	--	60	Week 4
HW 3A	Read: Chapter 4, Lesson 4 (62 pages) Evaluated by HW 3B	--	--	6.2	--	
HW 3B	Discussion Questions: 10 Questions	--	--	0.7	10	Week 4
HW 3C	Complete Project 2	--	--	8	--	
Total Week 3		3	2	14.2	70	
Week 4						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 4A	The Rendering Pipeline	3	--	--	--	
LAB 4A	Project 3	--	2	--	100	Week 5
HW 4A	Read: Chapter 5, Lesson 5 (112 pages) Evaluated by HW 4B	--	--	11.2	--	
HW 4B	Discussion Questions: 10 Questions	--	--	.7	10	Week 5
HW 4C	Complete Project 4	--	--	4	--	
Total Week 4		3	2	15.9	110	

Week 5						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 5A	Lighting	2	--	--	--	
EXAM 5A	Midterm Exam	1	--	--	150	
LAB 5A	Project 4	--	2	--	110	Week 6
HW 5A	Read: Chapter 6, Lesson 6 (42 pages) Evaluated by HW 5B	--	--	4.2	--	
HW 5B	Discussion Questions: 20 Questions	--	--	0.7	10	Week 6
HW 5C	Complete Project 4	--	--	3	--	
Total Week 5		3	2	7.9	270	
Week 6						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 6A	Texturing	3	--	--	--	
LAB 6A	Project 5	--	2	--	80	Week 7
HW 6A	Read: Chapter 7, Lesson 7 (39 pages) Evaluated by HW 6B	--	--	3.9	--	
HW 6B	Discussion Questions: 5 Questions	--	--	0.7	10	Week 7
HW 6C	Complete Project 5	--	--	4	--	
Total Week 6		3	2	8.6	90	
Week 7						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 7A	Blending	3	--	--	--	
LAB 7A	Project 6	--	2	--	80	Week 8
HW 7A	Read: Chapter 8, Lesson 8 (28 pages) Evaluated by HW 7B	--	--	2.8	--	
HW 7B	Discussion Questions: 5 Questions	--	--	0.7	10	Week 8
HW 7C	Complete Project 6	--	--	2.5	--	
Total Week 7		3	2	6	90	

Week 8						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 8A	Stenciling	3	--	--	--	
LAB 8A	Project 7	--	2	--	60	Week 9
HW 8A	Read: Chapter 9, Lesson 9 (22 pages) Evaluated by HW 8B	--	--	2.2	--	
HW 8B	Discussion Questions: 5 Questions	--	--	0.7	10	Week 9
HW 8C	Complete Project 7	--	--	2.5	--	
Total Week 8		3	2	5.4	70	
Week 9						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 9A	Geometry Shader	3	--	--	--	
LAB 9A	Project 8	--	2	--	40	Week 10
HW 9A	Read: Chapter 10, Lesson 10 (26 pages) Evaluated by HW 9B	--	--	2.6	--	
HW 9B	Discussion Questions: 5 Questions	--	--	0.7	10	Week 10
Total Week 9		3	2	3.3	50	
Week 10						
Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 10A	Course Wrap-Up	--	2	--	--	
EXAM 10A	Final Exam	3	--	--	150	Week 10
Total Week 10		3	2	0	150	

Course Hours Summary

Week	Topic	LEC Hours	LAB Hours	HW Hours
1	Vector Algebra	3	2	4.5
2	Matrix Algebra; Transformations	3	2	3.8
3	Direct3D Initialization	3	2	14.2
4	The Rendering Pipeline	3	2	15.9

5	Lighting; Midterm	3	2	7.9
6	Texturing	3	2	8.6
7	Blending	3	2	6
8	Stenciling	3	2	5.4
9	Geometry Shader	3	2	3.3
10	Course Wrap-Up; Final Exam	3	2	0
Total		30	20	69.6

Table/Point Breakdown

Week	Assignment	Possible Points	Percent of Grade
1	Labs	550	55%
	Math Questions	80	8%
2	Discussion Questions	70	7%
5	EXAM 5A, Midterm Exam	150	15%
10	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:

Coleman University Grade Assignment Policy:

Percent	Letter Grade	Grade Points
94-100	A	4
90-93	A-	3.67
87-89	B+	3.33
84-86	B	3
80-83	B-	2.67
77-79	C+	2.33
74-76	C	2
70-73	C-	1.67
67-69	D+	1.33
64-66	D	1
60-63	D-	0.67
N/A	INC	0
N/A	W	0
60 or above	CR	0
59 or below	NC	0
N/A	I	0
N/A	W	0
N/A	AU	0
N/A	TR	0
N/A	WV	0

Legend	
CR = Credit	NC = No Credit
I = Incomplete	W = Course Withdrawal
AU = Audit	TR = Transfer Credit
WV = Waiver	

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 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.