COURSE SYLLABUS
COM305: Design Patterns

Course Description

Modern software development depends heavily on design patterns to facilitate the construction of quality products. You will explore the most widely used software design patterns. Each pattern represents a best practice solution to a software problem in a specific context. Additionally, this course will cover the rationale and benefits of object-oriented software design patterns. You will examine numerous scenarios to develop skill in the implementation of good design patterns.

General Course Information

Number of Units/Weeks	4/10
#Hours Lecture/#Hours Laboratory/#Hours HWs*	40/00/80
Prerequisite(s)	None
Co-requisites (s)	None
Course Developer(s)	Leticia Rabor, M.S.
Date Approved / Last Review	May 2017 / May 2017

*Enhanced Learning Projects

Learning Outcomes

- Formulate an appropriate design pattern to solve a real world problem using an object-oriented language
- Examine the most common types of design patterns comprise each category: Creational, Structural, and Behavioral
- Construct a design pattern to promote reusability
- Provide a specific context in which each pattern may be effectively applied
- Develop a high level class diagram in UML for each pattern
- Improve existing systems by utilizing an appropriate design pattern
- Theorize how the different components of the pattern collaborate with each other

Instructional Methods Employed in this Course

- Lecture and reading assignments
- Hands-on exercises and labs
- Homework Projects
- PowerPoint Slides
- Practical application of theory and skills in authentic projects
- Build on prior knowledge and experience of students to enhance richness of class activities

Information Resources for this Course

Textbook

Eric Freeman, Elisabeth Robson, Bert Bates, Kathy Sierra. Head First Design Patterns, Sebastopol, CA: O'Reilly Media, 2004. ISBN-13: 978-0596007126

Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides. Design Patterns: Elements of Reusable Object-Oriented Software, Boston, MA: Addison-Wesley Professional, 1994. ISBN-13: 978-0201633610

Web Site Readings

Inheritance (IS-A) vs. Composition (HAS-A) Relationship, (n.d.). W3Resource. http://www.w3resource.com/java-tutorial/inheritance-composition-relationship.php Retrieved February 6, 2017

Gang of Four Design Patterns
http://www.blackwasp.co.uk/gofpatterns.aspx
Retrieved February 6, 2017

Table/Topics & Assignments

Types of Assignments:

Lecture -
Considered Lecture Hours

Classroom Discussion -
Considered Lecture Hours

In Class Critique -
Considered Lecture Hours

In Class (IC) Exercise -
Considered Lecture Hours

Reading -
Considered Homework (HW), work done outside of class

Projects –
Considered HW, work done outside of class
Considered LAB Hours

Midterm, Final, LASA -
Considered Lecture Hours

Week 1						
		LEC	LAB	HW	Point	

Type	Topic/Description	Hours	Hours	Hours	Value	Due
LEC 1A	Introduction to Design Patterns	4				
HW 1A	Read Design Patterns Chapter 1 (34 pages) & Head First Chapter 1 (34 pages). Evaluated by HW 1B			6.9		
HW 1B	Project 1			2	50	Due Week 2
Total Week 1		4	0	8.9	50	

Week 2

Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 2A	A Case Study; GRASP & SOLID Principles	4				
HW 2A	Read Design Patterns Chapter 2, (42 pages). Evaluated in HW 2B			4.2		
HW 2B	Project 2			4	50	Due Week 3
Total Week 2		4	0	8.2	50	

Week 3

Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 3A	Behavioral: Observer Structural: Decorator	4				
HW 3A	Read Head First chapters 2-3 (69 pages). Evaluated in HW 3B			6.9		
HW 3B	Project 3			2	50	Due Week 4
Total Week 3		4	0	8.9	50	

Week 4

Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 4A	Creational: Factory Method, Abstract Factory	4				
HW 4A	Read Head First Chapter 4 (59 pages). Evaluated in HW 4B			5.9		
HW 4B	Project 4			3	50	Due Week 5
Total Week 4		4	0	8.9	50	

Week 5

Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 5A	Structural: Adapter	1.5				
EXAM 5A	Midterm Examination	2			250	
HW 5A	Read Design Pattern Adapter pages 157-169 (12 pages) & Head First Chapter 7 (35 pages). Evaluated in HW 5B			4.7		Same Day
HW 5B	Project 5			4	50	Due Week 7
HW 5C	Introduce Final Project	.5		2	See Week 10	Due Week 10
Total Week 5		4	0	10.7	300	

Week 6

Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 6A	Behavioral: Command Structural: Singleton, Facade	4				
HW 6A	Read Design Pattern Command page 263-273 (10 pages), Singleton page 144-152 (8 pages), Façade pages 208-217 (9 pages), & Head First Chapters 5, 6 (61 pages). Evaluated in HW 6B			7.1		
Total Week 6		4	0	7.1	0	

Week 7

Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 7A	Behavior: Iterator Structural: Composite	4				
HW 7A	Read Head First Chapter 9 (68 pages). Evaluated in HW 7B			6.8		
HW 7B	Project 6			2	50	Due Week 9
Total Week 7		4	0	8.8	50	

Week 8

Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 8A	Behavioral: State, Strategy Structural: Proxy	4				
HW 8A	Read Design Pattern State page 260-365 (5 pages), Strategy pages 283-195 (12 pages), Proxy pages 208-217 (9 pages), & Head First Chapters 10-11 (112 pages). Evaluated in HW 8B			13.8		
Total Week 8		4	0	13.8	0	

Week 9

Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 9A	Compound Patterns: MVC	4				
HW 9A	Read Head First Chapter 12 (77 pages). Evaluated in HW 9B			7.7		
HW 9B	Project 7			2	50	Due Week 10
Total Week 9		4	0	9.7	50	

Week 10

Type	Topic/Description	LEC Hours	LAB Hours	HW Hours	Point Value	Due
LEC 10A	Better Living with Patterns: Patterns in the Real World	2				
Exam 10A	Final Exam	2			250	Same Day
HW 10B	Final Project Due			8	150	
Total Week 10		4	0	8	350	

Course Hours Summary

Week	Topic	LEC Hours	LAB Hours	HW Hours
1	Introduction to Design Patterns	4	0	8.9
2	A Case Study; GRASP and SOLID Principles	4	0	8.2
3	Observer and Decorator	4	0	8.9

4	Factory Method, Abstract Factory	4	0	8.9
5	Adapter, Midterm	4	0	10.7
6	Command, Singleton and Façade	4	0	7.1
7	Iterator, Composite	4	0	8.8
8	State, Proxy	4	0	13.8
9	Compound Pattern, MVC	4	0	9.7
10	Final	4	0	8
Total		40	0	93

Table/Point Breakdown

Week	Assignment	Possible Points	Percent of Grade
1	HW 1B, Project 1	50	5%
2	HW 2B, Project 2	50	5%
3	HW 3B, Project 3	50	5%
4	HW 4B, Project 4	50	5%
5	HW 5B, Project 5	50	5%
5	EXAM 5A, Midterm Exam	250	25%
7	HW 7B, Project 6	50	5%
9	HW 9B, Project 7	50	5%
10	EXAM 10A, Final Exam	250	25%
10	HW 10B, Final Project	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:
The Coleman University guidelines for the assignment of grades to total points earned is as follows:

Percent	Letter Grade	Grade Points
94-100	A	4.0
90-93	A-	3.67
87-89	B+	3.33
84-86	B	3.0
80-83	B-	2.67
77-79	C+	2.33
74-76	C	2.00
70-73	C-	1.67
67-69	D+	1.33
64-66	D	1.00
60-63	D-	0.67
N/A	INC	0
N/A	W	0
60 or above	CR	0
59 or below	NC	0
70 or above	PASS	0

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.

Student Academic Progression (SAP)

Graduate: Student must maintain an accumulative GPA of 3.0 or higher. If a student falls below the GPA requirement at any time during their program, they will be placed on Academic Probation. Once on Academic Probation, the student's accumulative GPA will be reviewed after 4 future mods have been completed (must take punitive graded courses). Failure to meet the 3.0 GPA requirements will result in an Academic

Suspension. A student is not allowed more than 150% of the standard length of the program in which to complete the requirements for graduation.

Undergraduate: Student must maintain an accumulative GPA of 2.0 or higher. If a student falls below the GPA requirement at any time during their program, they will be placed on Academic Probation. Once on Academic Probation, the student's accumulative GPA will be reviewed after 2 future mods have been completed (must take a minimum of 8 credits per mod). Failure to meet the 2.0 GPA requirements will result in an Academic Suspension. A student is not allowed more than 150% of the standard length of the program in which to complete the requirements for graduation.

Suspension and Reinstatement: If a student is suspended (SAP, plagiarism, code of conduct, etc.), the student must sit out one full MOD (currently 10 weeks for undergraduate level and 5 weeks for graduate level). The student will be required to submit a written reinstatement request, which will be reviewed by the Reinstatement Committee. The Reinstatement Committee will approve the request, deny the request, or request a meeting with the student for further consideration.

Grades: All grades listed will count as units attempted:

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
INC	N/A	0.00
W	N/A	0.00
CR	N/A	0.00
NC	N/A	0.00
PASS	N/A	0.00

Failed Courses: If a student receives a FAIL grade, they may retake the course. The retake course will be charged at current tuition pricing. The student will be able to *replace* the previous FAIL grade with the grade received on the retake course.

Drop Period & Refund:

Graduate

Sessions Attended	Refund	Grade Received When Dropping Course
0	100%	No Grade
1	100%	No Grade
2	80%	W
3	70%	W
4	60%	W
5	50%	Grade Earned
6	0%	Grade Earned
7	0%	Grade Earned
8	0%	Grade Earned
9	0%	Grade Earned
10	0%	Grade Earned

Undergraduate

Week In MOD	Refund	Grade Received When Dropping Course
No Start	100%	No Grade
1	100%	No Grade
2	80%	W
3	70%	W
4	60%	W
5	50%	Grade Earned
6	0%	Grade Earned
7	0%	Grade Earned
8	0%	Grade Earned
9	0%	Grade Earned
10	0%	Grade Earned

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 can not 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.