

Sul Ross State University

A Member of the Texas State University System

CSAT3360 – User Interface Programming – spring, 2015

Instructor: Dr. Kennard Lavers

Office Location: ACR 201

Office Telephone: (432) 837-8068

Electronic Mail: razuaje@sulross.edu

Office hours: MWF (9:00am-11:00am& 1PM-3:00pm)

## **Course Objectives**

This course will introduce computer science students to the theory and practice of developing user interfaces using Unity3D game engine. Practical concerns will be balanced by discussion of relevant theory from the literature of computer science (graphics, software engineering, and multimedia), cognitive psychology, and industrial design. Students will also participate in individual and group projects to design, implement, and evaluate user interfaces. Students who take this class will:

- (a) Develop practical user interface design skills, such as menus, inventory systems ...
- (b) Develop an understanding of the human side of HCI computing
- (c) Understand the significance of historical case studies in order to avoid faulty designs
- (d) Learn about future directions in HCI applied to gaming technologies.

### **Textbook:**

Designing the User Interface: Strategies for Effective Human-Computer Interaction, 5Ed, 2009

by Ben Shneiderman , Catherine Plaisant , Maxine Cohen,

ISBN-13: 978-0321537355 ISBN-10: 0321537351

## **Teaching Methods**

Assignments: Exercises will be periodically assigned to help support and supplement material found in the textbook. No make-ups are allowed, unless medical or extreme conditions are considered. Tests, assignments and final exam will be delivered through Blackboard with a date and time limit. No make ups are allowed, unless medical or extreme conditions are considered.

### Grading

Letter grades will be determined using a standard percentage point evaluation as outlined below.

A 90 - 100 points

B 80 - 89 points

C 70 – 79 points D 60 – 69 points

F Below 60 points The final grade will be computed on the following weights:

### Tests:

Exam 1 OR Project 1 ==> 15%

Exam 2 OR Project 2 ==> 15%

Exam 3 OR Project 3 ==> 15%

Exam 4 OR Project 4 ==> 15%

Final ==> 20%

Assignments (individual/group) ==>15%

Participation ==> 5%

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## **Course Policies**

Exams, quizzes and assignments: NO MAKE-UPS ARE ALLOWED, unless medical or extreme conditions are present.

### **Academic dishonesty**

You are expected to do your own work on all assignments, exams, quizzes, and projects. Any dishonest work will be penalized with a grade of zero.

### **Need for assistance**

Qualified students with disabilities needing academic or other accommodations to ensure full participation in the programs, services and activities at Sul Ross State University should contact the Disabilities Services Coordinator, in Counseling and Prevention Services, Ferguson Hall 112, Box C-117, Alpine, Texas 79832.

## Posting of Grades

As soon as assignments, tests and final exam are graded, the grades will be posted in Blackboard.

## Tentative Content Schedule

Week	Material	Test/Assignments
Week 1	CHAPTER I Usability of Interactive Systems 21 1.1 Introduction 22 1.2 Usability Goals and Measures 31 1.3 Usability Motivations 33 1.4 Universal Usability 40	TBA
Week 2	CHAPTER 2 Guidelines, Principles, and Theories 2.1 Introduction 74 2.2 Guidelines 75 2.3 Principles 80 2.4 Theories 97	TBA
Week 3	CHAPTER 3 Managing Design Processes 115 3.1 Introduction 116 3.2 Organizational Design to Support Usability 117 3.3 The Four Pillars of Design 120 3.4 Development Methodologies 126 3.5 Ethnographic Observation 129 3.6 Participatory Design 132 3.7 Scenario Development 134 3.8 Social Impact Statement for Early Design Review 3.9 Legal Issues 140	TBA
Week 4	CHAPTER 4 Evaluating Interface Designs 149 4.1 Introduction 150 4.2 Expert Reviews 152 4.3 Usability Testing and Laboratories 156 4.4 Survey Instruments 167 4.5 Acceptance Tests 172 4.6 Evaluation During Active Use 174 4.7 Controlled Psychologically Oriented Experiments 180	TBA
Week 5	CHAPTER 5 Direct Manipulation and Virtual Environments 191 5.1 Introduction 192 5.2 Examples of Direct Manipulation 193 5.3 Discussion of Direct Manipulation 211 5.4 3D Interfaces 218 5.5 Teleoperation 223 5.6 Virtual and Augmented Reality 227	TBA
Week 6	CHAPTER 6 Menu Selection, Form Fill-in, and Dialog Boxes 243	TBA

	6.1 Introduction 244 6.2 Task-Related Menu Organization 245 6.3 Single Menus 246 6.4 Combinations of Multiple Menus 254 6.5 Content Organization 262 6.6 Fast Movement through Menus 268 6.7 Data Entry with Menus: Form Fill-in, Dialog Boxes, and Alternatives 269 6.8 Audio Menus and Menus for Small Displays 277	
Week 7	CHAPTER 7 Command and Natural Languages 289 7.1 Introduction 290 7.2 Command-Organization Functionality, Strategies, and Structure 294 7.3 Naming and Abbreviations 299 7.4 Natural Language in Computing 304	TBA
Week 8	CHAPTER 8 Interaction Devices 321 8.1 Introduction 322 8.2 Keyboards and Keypads 323 8.3 Pointing Devices 329 8.4 Speech and Auditory Interfaces 8.5 Displays-Small and Large 359 349	TBA
Week 9	CHAPTER 9 Collaboration and Social Media Participation 377 9.1 Introduction 378 9.2 Goals of Collaboration and Participation 381 9.3 Asynchronous Distributed Interfaces: Different Place, Different Time 386 Contents 17	TBA
Week 10	9.4 Synchronous Distributed Interfaces: Different Place, Same Time 401 9.5 Face-to-Face Interfaces: Same Place, Same Time 407	TBA
Week 11	CHAPTER 10 Quality of Service 423 10.1 Introduction 424 10.2 Models of Response-Time Impacts 10.3 Expectations and Attitudes 434	TBA
Week 12	10.4 User Productivity 438 10.5 Variability in Response Time 440 10.6 Frustrating Experiences 441	TBA
Week 13	Review for Final	
Week 14	Final	

## Unity 3D Tentative Content

### 1. Unity's and Playmaker's User Interface

- Interface overview and main menu

- Hierarchy panel

- Inspector panel

- Project panel

- Views

### 2. Components and State Machines

- Game objects, components, and properties

- Working with prefabs

- Finite state machines, states, and actions

- Interaction between game objects

### 3. Scripting and Custom Actions

- Writing a Unity Script

- Overview of standard Unity classes

### 4. Creating static menus

### 5. Creating dynamic menus for inventory system.

### 6. Creating dynamic menus for interaction with playable/non-playable character.

### 7. Incorporating items 1 through 6 in a basic Unity3D game.