GAME 210 Object-Oriented Design for Game Development

Created by: Qi Zhang
Updated by: Kathleen Mahoney
A. **TITLE:** Object-Oriented Design for Gaming

B. **COURSE NUMBER:** GAME 210

C. **CREDIT HOURS:**

<table>
<thead>
<tr>
<th># Credit Hours</th>
<th># Lecture Hours</th>
<th># Lab Hours</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2 per week</td>
<td></td>
<td>(1) two-hour recitation per week</td>
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</table>

**Course Length:** 15 Weeks

D. **WRITING INTENSIVE COURSE:** No

E. **GER CATEGORY:**

F. **SEMESTER(S) OFFERED:** Fall

G. **COURSE DESCRIPTION:**

This course includes programming assignments and a game design project, which will give students an opportunity to practice different roles inside a game development team, and help them to gain practical knowledge of developing game projects through using object-oriented software design pipelines.

H. **PRE-REQUISITES/CO-REQUISITES:**

a. Pre-requisite(s): GAME 130  
b. Co-requisite(s):  
c. Pre- or co-requisite(s):

I. **STUDENT LEARNING OUTCOMES:**

<table>
<thead>
<tr>
<th>Course Student Learning Outcome [SLO]</th>
<th>PSLO</th>
<th>GER</th>
<th>ISLO</th>
</tr>
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<tbody>
<tr>
<td>a. Identify object-oriented design ideas and pipelines</td>
<td>PSLO 8</td>
<td>5</td>
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<tr>
<td>Demonstrate an understanding of recent principles of game design, including, programming, narrative, character and level design.</td>
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<tr>
<td>b. Apply proper knowledge and skills of object-oriented programming to game design and development</td>
<td>PSLO 8</td>
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<tr>
<td>Demonstrate an understanding of recent principles of game design, including, programming, narrative, character and level design.</td>
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<tr>
<td>c. Demonstrate hands-on techniques and skills of testing and troubleshooting</td>
<td>PSLO 4</td>
<td>2 [CA][IA] [PS]</td>
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<tr>
<td>Recognize the underlying principles guiding the relevant visual, audio, interactive, and narrative aesthetics of an animation or a game</td>
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<td>d. Explore proper object-oriented design, component model, and design-driven control techniques.</td>
<td>PSLO 3</td>
<td>2 [CA][IA] [PS]</td>
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<td>Students will explore, evaluate, and analyze assigned projects through group critique.</td>
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<td>e. Implement algorithms of object-oriented game design and interactive development techniques for game development.</td>
<td>PSLO 6</td>
<td>2 [PS]</td>
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<tr>
<td>Use the design process: Concept, Design, Prototype, Production, Testing and Revision to evaluate, and implement strategies to find a solution to a problem.</td>
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<tr>
<td>KEY</td>
<td>Institutional Student Learning Outcomes [ISLO 1–5]</td>
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<tr>
<td>ISLO #</td>
<td>ISLO &amp; Subsets</td>
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</table>
| 1 | Communication Skills  
Oral [O], Written [W] |
| 2 | Critical Thinking  
Critical Analysis [CA], Inquiry & Analysis [IA], Problem Solving [PS] |
| 3 | Foundational Skills  
Information Management [IM], Quantitative Literacy/Reasoning [QTR] |
| 4 | Social Responsibility  
Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T] |
| 5 | Industry, Professional, Discipline Specific Knowledge and Skills |

**J. APPLIED LEARNING COMPONENT:**  
Yes ___X___  No_______

**K. % TEXTS:**  

**L. % REFERENCES:**  
Practical C++ Programming with Game Development by Scott Tozer (Author). Publisher: The Readers Sanctuary Publications (26 Oct. 2014). ASIN: B00OXDZGUE


**M. % EQUIPMENT:**  
PC Computer Lab with Microsoft Office, Unity, Visual Studio, and NVidia graphics hardware installed.

**N. % GRADING METHOD:**  
A-F

**O. % SUGGESTED MEASUREMENT CRITERIA/METHODS:**  
- Assignments  
- Projects  
- Quizzes  
- Exams  
- Participation
P. **DETAILED COURSE OUTLINE:**

1. **Introduction**
   a. Introduction of the high-level overview of object-oriented programming for game design and development
   b. Introduction to the Computer Lab and related graphics hardware and software for game development
   c. Syllabus
2. **Object-oriented design (OOD)**
   a. Event-based programming
   b. Resource management
   c. Animation
3. **Object-oriented programming (OOP)**
   a. Physics
4. **The game development process**
5. **Software engineering for games**
   a. Components in a game or game engine.
   b. Open source game engine components.
6. **Object-oriented design for games I**
7. **Object-oriented design for games II**
8. **The component model for game development**
9. **Cross-platform development**
10. **Game objects**
11. **Design-driven control**
12. **Iterative development techniques**
13. **Game development roles**
   a. Designer
   b. Programmer
   c. Level Designer
   d. Character Designer
14. Case study
15. Final Project Due

Q. **LABORATORY OUTLINE:**

None