

GEORGE MASON UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT
INSTRUCTIONAL TECHNOLOGY

EDIT 732

Analysis and Design of Technology-Based Learning Environments

Fall 2009

Monday 4:30 – 7:10 pm

Fairfax Campus

PROFESSOR:

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COURSE DESCRIPTION

1. **Prerequisites** – EDIT 730, and knowledge of authoring tool (or Web development)
2. **Course description from the University Catalog:** Enables design, implementation, and evaluation of technology-based education and training materials using advanced computer-based authoring tools.

NATURE OF COURSE DELIVERY

This course will provide students with opportunities to experience the instructional design process as applied to the conceptual prototype of a technology-based learning system or interface design. Students will have the opportunity to interact with developers, subject matter experts, target audience members and draft a comprehensive design approach as well as prototype their ideas using selected technology software tools. The course will be focused on facilitating connections between interdisciplinary approaches of prototyping, design and development of teaching and learning systems/interfaces from multiple disciplines including instructional design, computer science, human

computer interface and related fields.

STUDENT OUTCOMES

This course is designed to enable students to:

1. understand the process of instructional design and development as applied to a real-world project;
2. apply instructional design, learning theories and interdisciplinary design principles to technology prototype development;
3. apply product development, evaluation, research and design/user research methodologies to instructional design and development
4. collect and analyze user data related to iterative instructional design and development
5. contribute positively to the team's mission and goals and support of individual members and team members' professional growth and development
6. document individual's contributions to team's mission and goals
7. contribute to project management and accomplishment of goals
8. present design prototype

PROFESSIONAL STANDARDS:

This course adheres to the following Instructional Technology Program Goals and Standards for Programs in Educational Communications and Instructional Technologies established by the Association of Educational Communication and Technologies (AECT) under the National Council for the Accreditation of Teacher Education (NCATE).

Standard 1 – Design

- 1.1.2.a Demonstrate in-depth synthesis and evaluation of the theoretical constructs and research methodologies related to instructional design as applied in multiple contexts.
- 1.1.3.b Utilize the research, theoretical, and practitioner foundations of the field in the development of instructional materials.
- 1.1.4.a Conduct basic and applied research related to technology integration and implementation.
- 1.1.5.c Articulate the relationship within the discipline among theory, research, and practice as well as the interrelationships among people, processes, and devices.
- 1.3.a Identify multiple instructional strategy models and demonstrate appropriate contextualized application within practice and field experiences.

REQUIRED TEXTS:

- 1) Goodwin, Kim (2009) *Designing for the Digital Age: How to Create Human-Centered Products and Services*, San Francisco:Wiley
- 2) Rossett, Alison (2009). *First Things Fast* (2nd edition), San Francisco:Wiley
- 3) Piskurich, George (2006). *Rapid Instructional Design*, San Francisco: Pfeiffer
- 4) Required online resources as noted on course Wiki

COURSE REQUIREMENTS, PERFORMANCE-BASED ASSESSMENT, AND EVALUATION CRITERIA

A. Requirements

1. Investigation of Mobile Learning and Mobile Interface Design - Individual Presentations and Delicious Postings (10%)

Each student will present their individual research/exploration into a relevant, related area of mobile learning or mobile interface design to contribute to the collaborative investigation of these topics in the course. The topics will be selected during the first two weeks of the course and should provide direct application to our design task (described below). In addition, 2-3 relevant URL's will be posted to the 730 course delicious site. Each presentation will be expected to provide:

- A 20-minute overview of the area of research/exploration
- Includes statement of how these resources (relevant articles, research, websites, blogs, corporate sites, developer sites, and/or personal contacts if applicable, etc.) are directly connected to and can benefit our collective effort toward meeting the specific design challenge
- Includes connection to instructional design, interface design, cognitive design or related principles
- Incorporates examples, recommendations, (not just summarization of information in powerpoint) on how to leverage this information for our purposes

2. Performance Analysis Briefing Report (20%)

A small group of students (thereafter referred to as your design group) will individually contribute to the collective purpose of initially investigate the design problem and context. Design groups will collect relevant information to produce a performance analysis briefing report (see Rossett pg. 194-201) describing the design project context including:

- Introduction
- Description of organizational and individual drivers and barriers to success for the overall problem (mobile design) and for selected instructional problem (mobile learning experience)
- Priorities for instruction, support, training or prototype development
- List of matching findings, drivers and potential solutions
- Recommendations and rationale
- Team members roles and responsibilities including lead(s) on assignment

3. Needs Assessment/Audience and Task Analyses (10%)

Each design group will further explore and define the interface, teaching, learning or training problem and context they choose to address within the defined design direction. This may require varying data gathering and analytic techniques (than the performance analysis brief but also building on it) such as literature review

and observation, interviews etc. with the target audience or related subject matter experts/target audience members, day-in-the-life studies, etc. Students will analyze this data into a more thorough report than performance analysis that includes the following elements and will be posted to the course Wiki and presented in class:

- Identify and define interface/learning problem
- Demographics of target audience
- Knowledge/Training gap
- Job or learning environment/interface context of use description
- Learning or performance goal/interface requirements based on data analysis
- Task analysis/task hierarchies/task scenarios/flowcharts, etc.
- Technology skills/aptitudes/gap assessment
- Reported team member roles and responsibilities including lead(s) on assignment

4. Persona/User Needs Documentation (10%)

Each design group will determine relevant user groups and outline content related to each persona for presentation to the class. Different groups may plan an interface design template for both the general template and learning problem that provides an elaborated, more customized interface design for differing audiences (e.g. adult learner, informal or formal learner, undergraduate, graduate, elementary, middle, high school, retired, etc.) in multiple contexts (e.g. school, university, online learning, informal learning, formal learning, specific cultural contexts, etc.). The user needs documentation provides a synthesis of what has been learned from the performance and needs analyses and translate that information into a persona for design directions, rationale and eventual usability testing or other techniques at different points during the semester and next semester. Each group must post their personas/scenarios on the course Wiki that includes the following:

- Personas for interface/learning design problems
- Sensitivity to varying audiences and contexts
- Direct correlation to prior collected “data” in performance and needs analysis
- Documenting user scenarios/personas and needs
- Reported team member roles and responsibilities including lead(s) on assignment

5. Mobile Interface Template Design Submissions, Rationale and Testing (20%)

Each design group will strategize and conceptualize their mobile interface template design for presentation and feedback considering the analyses of audience, design goals and concept modeling of mobile interface design. Each group will present their concept mobile interface template design (and post on course Wiki) including:

- Develop interface concept model/template design
- Direct correlation to prior analyses (e.g. performance, needs and user needs analyses)
- How interface template design relates to principles, constructs, examples, development guidelines learned about in the course through collective investigation
- Testing of small module of content integrated with mobile course interface template design
- Informal feedback cycles from target audience members (or accessible participants) and experts.
- Analysis, synthesis and documentation of feedback
- Identified revisions to be incorporated into the design prototype (which will incorporate a learning module)
- Reported team member roles and responsibilities including lead(s) on assignment

6. Design Prototype Presentation and Documentation (20%)

Each design group will present their elaborated mobile learning experience prototype (further implementing their interface template design with content and interactions demonstrating sound instructional design principles. Each group will relate a brief account of process to their client and classmates (as well as possibly target audience members). Each group will review with their client, audience member and with their classmates the site map, flow chart, wireframes, layout and visual design for feedback.

- Site map
- Flowchart
- Wireframes
- Layout and visual design
- Documented audience and client feedback with noted design revisions for final presentation
- Reported team member roles and responsibilities
- Prototype and process presented to class and client(s) or representatives
- Reported team member roles and responsibilities including lead(s) on assignment

B. Performance-Based Assessments - This course includes multiple performance-based assessments: individual presentations, performance analysis brief, needs analysis report, persona/user needs documentation, design or prototype submission, rationale and testing and presentation.

*Due to the fluid, real-world and dynamic nature of the design process, the instructor reserves the right to change the syllabus during the course if needed based on individual project needs/requirements. Every effort will be made to keep students abreast of changes as soon as possible but professionalism and demonstration of professional aptitude as a designer to varying levels of ambiguity and required flexibility in complex, real world projects is expected in this course.

C. Criteria for evaluation - Assessment of each performance assessment is guided by the rubric below. Given the nature of the assignments and the authentic projects involved in this course, the assessment process in this course will be based upon group process model in evaluating individual performance. For each deliverable/assignment groups will provide detail on the roles and responsibilities that the individual has assumed on each of the assignments. It is expected that individual students contribute to each design group assignment. It is also expected that students will rotate the lead(s) on each assignment so that each person or group of 2 will take on the responsibility of managing or leading that assignment to its completion. Students should indicate which assignment that they took the lead on and detail/report the contributions they have made in the documentation of each of the assignment posted to the course Wiki as well as in their individual portfolios. In addition, students will evaluate their own and group members' overall contributions to the design and development of the instructional module at the mid-point and end of the semester. Although, the Professor reserves the right to determine individual grades based on multiple sources of input (akin to qualitative analysis of multiple sources of data), this evaluation form will be completed using the rubric below to provide additional data on the performance on the identified criteria.

The rubric below will be used to evaluate individual performance as part of the project group based on observations in class, postings on Wiki, quality of assignments under student leads, reporting of contributions to each assignment, etc. As an inherent part of this course, students are expected to demonstrate the professionalism and teamwork that would be required as a professional instructional designer in the workplace (5% of grade is allocated to stated contributions to group project process and 5% to other project contributions not directly covered in the rubric).

The following rubric will be used to evaluate individual performance as part of the project group. Students use this framework to assess their own and their peers' performance accordingly. The instructor(s) also

evaluate students based on this rubric.

	Exceeds Expectations (E = Exceeds Expectations) A level work	Meets Expectations (M = Meets Expectations) B level work	Below Expectations (B = Below Expectations) C level work
Overall Contributions to Group Project Process (5%) (self, peer, instructor)	Demonstrated full participation in group meetings and communication, showed exceptional effort on individual tasks, exceeded individual contribution and was instrumental in leading group forward, respectfully acknowledged and integrated all members' skills in project development process	Participated in group meetings and communication efforts, delivered on individual responsibilities, made valuable individual contributions to group process, contributed to progression of project.	Noted absences at group meetings or communication, late or missing items under individual responsibility, hindered progress of project, did not adhere to group norms and did not treat members ideas and opinions with respect.
Individual Presentation (10%)	Provided useful overview of topic in a dynamic 20-minute presentation providing valuable information toward the design challenge. Included statement of how resources were related to design challenge and connections to principles in instructional design, human computer interface design or cognition were provided. Incorporated useful and applicable examples, recommendations, further resources in delicious postings rather than just summarization of information.	Provided overview of topic in a 20-minute presentation providing information related to the design challenge. Some statement of how resources were related to design challenge and some connection to principles in instructional design, human computer interface design or cognition were provided. Few useful and applicable examples, recommendations or further resources in delicious postings were provided. More summary than direct application of information.	Did not provide presentation useful for course design challenge discussion through any main topic or interest or comments focused on topic related to readings. Little or no resources provided to class.
Performance Analysis Briefing Report (20%)	Contributed to a thorough investigation of design problem and context according to Rossett's	Contributed to adequate investigation of design problem and context adhering to Rossett's	Little evidence of contribution and investigation of design problem and context. Little evidence of incorporation of

	guidelines. Provided all required elements of briefing in a highly informative and professional report.	guidelines. Provided required elements of briefing.	Rossett's guidelines. Does not provide many of the required elements of briefing.
Needs Analysis/User Research	Full participation in excellent data gathering and analysis of relevant information to design problem and context. All required elements are included in a rich, data-driven professional report that promotes good design.	Participation in adequate data gathering and analysis of relevant information to design problem and context. All required elements are included in report.	Little or no evidence of data gathering and analysis of information related to design problem and context. Major elements are missing from report.
Persona/User Needs Documentation	Significant contribution to conceptualization and documentation of persona related to interface template and/or learning design problem. Demonstrates clear connection to data collection and analysis in performance and needs analysis. Demonstrates acute sensitivity to varying audience and contextual needs for interface/learning design. Documentation posted on Wiki in a timely manner for review by others.	Contribution to conceptualization and documentation of persona related to interface template and/or learning design problem. Demonstrates some connection to data collection and analysis in performance and needs analysis. Demonstrates sensitivity to varying audience and contextual needs for interface/learning design. Documentation posted on Wiki in a timely manner for review by others.	Little or no contribution to required elements of persona related to interface template and/or learning design problem. Demonstrates no clear connection to data collection and analysis in performance and needs analysis. Demonstrates little or no sensitivity to varying audience and contextual needs for interface/learning design. Documentation not posted on Wiki in a timely manner for review by others.
Mobile Interface Template Design Submissions, Rationale and Testing Documentation	Significant contribution to interface template design submission (interface concept model and template design). Clear connection to design principles from instructional design, human computer interface design or cognitive research discussed in course or individually identified. Outstanding evidence of testing of small learning module within mobile course interface template design for specific audience. Feedback provides logical course of	Contribution to interface template design submission (interface concept model and template design). Some connection to design principles from instructional design, human computer interface design or cognitive research discussed in course or individually identified. Some evidence of testing of small learning module within mobile course interface template design for specific audience. Feedback provides some	Little or no evidence of individual contribution to interface template design submission (interface concept model and template design). Little or no connection to design principles from instructional design, human computer interface design or cognitive research discussed in course or individually identified. Little or no evidence of testing of small learning module within mobile course interface template design for specific audience. Little or no feedback that provides a course of action for identified revisions of prototype.

	action to identified revisions of prototype.	course of action for identified revisions of prototype.	
Design Documents and Prototype Presentation	Full participation in professional presentation of well-articulated design strategy, design document elements and prototype description for review by client	Some participation in professional presentation of a well-articulated design strategy, design document elements and prototype for review by client	Little or no evidence of participation in design strategy, design document elements and prototype presentation for client.
Other contributions	Significant contributions related to the progress of the team, development of processes to move project forward and development of project. Extra effort demonstrated.	Notable individual contributions related to progress of team, development of processes to move project forward and development of project. Average effort demonstrated	Little or no attention directed toward helping the team reach their goals.

D. Grading Scale

Requirements	Percentage
Overall Contributions to Group Project Process	embedded
Individual Presentation	10%
Performance Analysis Briefing Report	20%
Needs Analysis/User Research	20%
Persona/User Needs Documentation	10%
Mobile Interface Template Design Submissions, Rationale and Testing Documentation	20%
Design Documents and Prototype Presentation	20%

COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT STATEMENT OF EXPECTATIONS:

All students must abide by the following:

Students are expected to exhibit professional behavior and dispositions. See gse.gmu.edu for a listing of these dispositions. Students must follow the guidelines of the University Honor Code. See http://www.gmu.edu/catalog/apolicies/#TOC_H12 for the full honor code. Students must agree to abide by the university policy for Responsible Use of Computing. See <http://mail.gmu.edu> and click on Responsible Use of Computing at the bottom of the screen.

Students with disabilities who seek accommodations in a course must be registered with the GMU Disability Resource Center (DRC) and inform the instructor, in writing, at the beginning of the semester. See www.gmu.edu/student/drc or call 703-993-2474 to access the DRC.

Instructional Technology Student Expectations:

****Required Portfolio Elements for IT students(EDIT601/EDIT701)**

If you are a student in the IT program, it is strongly suggested that you retain your design brief/prototype elements produced in this course for your required online Masters electronic portfolio assessment process at the mid-point and end of your coursework (EDIT601/701). You may also want to document the feedback from your peers and indicate what elements of the design were adjusted based on collected formative feedback. You will be asked to reflect on your learning within this course and the best time to formulate those reflections is when you are currently in the course. Please retain these electronic materials for your required portfolio assessment.

Mason email Account and IT Listserv

As a GMU student, you will need to acquire a GMU email account. Contact the [IT Support Center](#) to activate your account. If you are an IT student, please also subscribe to the IT Listserv which will post job opportunities, program announcements, etc. [Directions](#) about how to subscribe can be located on the IT Program Website.

PROPOSED CLASS SCHEDULE

WEEK	IN CLASS ACTIVITIES	PREPARATION FOR FOLLOWING CLASS ACTIVITIES
<p>1</p> <p>Sept 1</p> <p>(F to F)</p>	<p>Sharing/Introductions</p> <p>Overview of Syllabus: Schedule and Requirements</p> <p>Working in virtual and face-to-face contexts (course Wiki and course delicious postings)</p> <p>Sign up for week of individual presentation</p>	<ul style="list-style-type: none"> - Read Rapid Instructional Design: Chapters 1-2 - Read First Things Fast: Chapter 1 - Read Designing for the Digital Age: Chapters 1-2 - Post bio on Wiki in project group folders
<p>2</p> <p>Sept 8</p> <p>(F to F)</p>	<p>Introduction to project focus, constraints, client and context</p> <p>Introduction to Performance Analysis: Three perspectives integrated</p> <p>Determine groups</p> <p>Meet as groups, exchange contact information, draft questions about design project post to Wiki</p>	<ul style="list-style-type: none"> - Review resources related to project provided on Wiki to attempt to quickly come up to speed or enhanced understanding of design problem context and parameters - Add to project resources on group Wiki spaces
<p>3</p> <p>Sept 15</p> <p>(Online)</p>	<p>Generate questions for client/SME in design groups</p> <p>Further investigation of design project parameters, constraints, affordances, etc.</p> <p>Begin design group collaboration on performance analysis</p>	<ul style="list-style-type: none"> - Read First Things Fast: Chapter 3-4 - Read Designing for the Digital Age: Chapters 3 - Begin work on performance analysis, post evolving drafts on Wiki in project group folders
<p>4</p>	<p>Client/SME visit and interaction</p>	<ul style="list-style-type: none"> - Read Rapid Instructional Design: Chapters 3

<p>Sept 22 (F-to-F)</p>	<p>Conduct Performance Analysis</p> <p>Investigate and analyze online and off-line information on problems, opportunities, drivers, barriers on larger design context (mobile interface design) and identified learning course (mobile learning module experience)</p> <p>Work in design groups to quickly synthesize resources, identify situation, client/partner goals, problems, drivers, barriers, potential solution systems</p>	<ul style="list-style-type: none"> - Read First Things Fast: Chapter 5-6 - Read Designing for the Digital Age: Chapters 4 - Post drafts on Wiki in project group folders
<p>5 Sept 29 (Online)</p>	<p>Introduction to Needs Analysis and User Research</p> <p>Continue group work on Performance Analysis</p> <p>Begin to Plan for Data Collection for Needs Analysis</p>	<ul style="list-style-type: none"> - Read First Things Fast: Chapter 7-8 - Read Designing for the Digital Age: Chapters 5-6 - Post drafts on Wiki in project group folders
<p>6 Oct 6 (F-to-F)</p>	<p>Performance Analysis Briefing DUE</p> <p>Additional Potential Methods for Needs Analysis and User Research</p> <p>Recruit Participants</p> <p>Conduct Planned Data Collection for Needs Analysis</p>	<ul style="list-style-type: none"> - Read First Things Fast: Chapter 9 - Read Designing for the Digital Age: Chapters 7-10 - Post drafts on Wiki in project group folders
<p>7 Oct 13 (Online)</p>	<p>Conduct Planned Data Collection for Needs Analysis</p> <p>Methods for User Research</p> <p>Introduction to Personas</p> <p>Work in Groups to Begin to Analyze</p>	<ul style="list-style-type: none"> - Read Designing for the Digital Age: Chapters 11 - Post drafts on Wiki in project group folders

	Data for Needs Analysis	
8 Oct 20 (F-to-F)	<p>Analysis of Data from Needs Analysis and User Research</p> <p>Begin Drafting Personas based on data from needs analysis and user research</p>	<ul style="list-style-type: none"> - Read Designing for the Digital Age: Chapters 12 - Post drafts on Wiki in project group folders
9 Oct 27 (Online)	<p>Needs Analysis Report DUE</p> <p>Guest speaker iPhone Applications developer</p> <p>Revise Personas</p> <p>Begin to Draft Objectives, Determine Scope, Gather Content for Mobile Learning Experience Module</p>	<ul style="list-style-type: none"> - Read Rapid Instructional Design: Chapters 4-5 - Read Designing for the Digital Age: Chapters 13-14 - Post drafts on Wiki in project group folders
10 Nov 3 (F-to-F)	<p>Persona/User Needs DUE</p> <p>Begin as a Design Group to Define Requirements, Visualize Solutions and Design Processes for Mobile Interface</p> <p>Refine Objectives, Determine Scope, Gather Content for Mobile Learning Experience Module</p>	<ul style="list-style-type: none"> - Read Designing for the Digital Age: Chapters 15 - Post drafts on Wiki in project group folders

<p>11 Nov 10 (Online)</p>	<p>Discuss Patterns for Design</p> <p>Define Interaction Frameworks, Functional Elements, Principles and Patterns in Your Design</p> <p>Sketching and Other Low Fidelity Prototyping Processes</p> <p>As a Design Group Model and Sketch Solutions</p>	<p>- Read Designing for the Digital Age: Chapters 16-19</p> <p>- Post drafts on Wiki in project group folders</p>
<p>12 Nov 17 (F-to-F)</p>	<p>As a Design Group Model and Sketch Solutions</p> <p>Plan for Mobile Course Interface Template Design Submissions, Rationale and Testing Documentation</p>	<p>- Read Designing for the Digital Age: Chapters 20-22</p> <p>- Post drafts on Wiki in project group folders</p>
<p>13 Nov 24</p>	<p>THANKSGIVING RECESS</p>	<p>NO CLASS</p>
<p>14 Dec 1 (F to F)</p>	<p>Discuss Detailed Design Processes</p> <p>Implement Detailed Design Processes</p> <p>Begin to Draft Mobile Course Interface Template Design Submissions, Rationale (compile from prior phases) and Testing Documentation (conduct informal evaluation).</p>	<p>- Read Designing for the Digital Age: Chapters 23-26</p>
<p>15 Dec 8 (Online)</p>	<p>Implement and Document Detailed Design</p> <p>Finalize Mobile Course Interface Template Design Submissions, Rationale and Testing Documentation</p> <p>Conduct Informal User Evaluation</p> <p>Finalize Mobile Course Interface Template Design Submissions, Rationale</p>	

	and Testing Documentation	
16 Dec 15 (F to F)	Mobile Course Interface Template Design Submissions, Rationale and Testing Documentation DUE FINAL PRESENTATION	Congratulations!