

LS 301 :: Design of Learning Environments

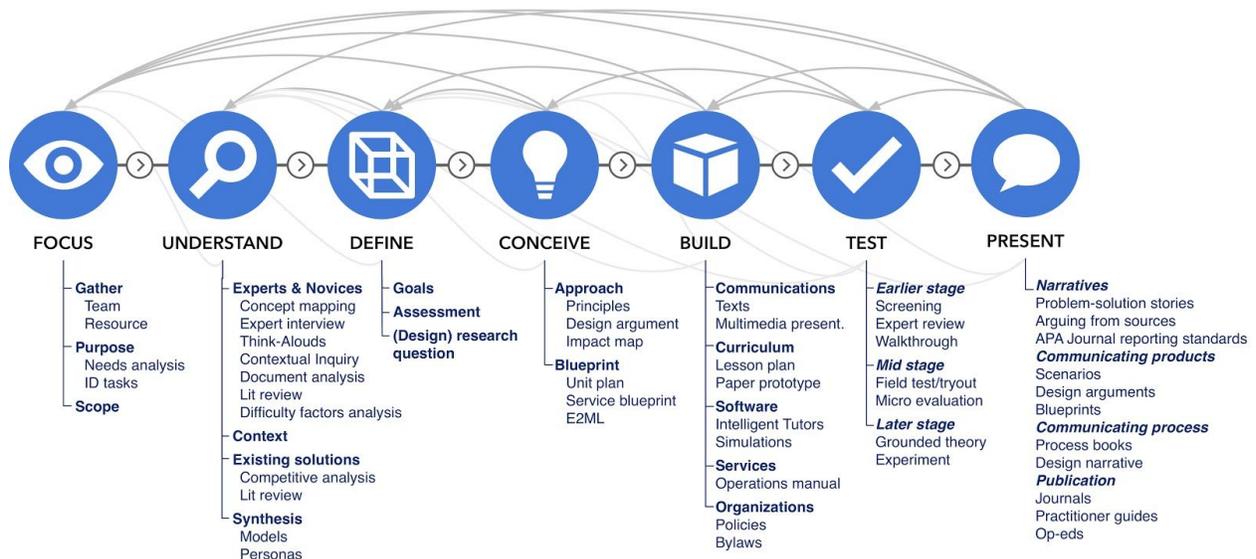
Northwestern University, School of Education and Social Policy

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SUMMARY

This course explores how to use a human-centered design process to design learning environments. This quarter, we will be specifically focusing on the design of educational games that incorporate playful elements to support engaged learning. You will work in a team of 3-4 to design a playable game prototype that teaches an interesting and challenging concept or skill. You will use interaction design methods like brainstorming, personas, scenarios, and diagrams to understand your problem space and sketch possible game solutions. You will also create low-fidelity prototypes of your games and test them using expert reviews and field tests.

To design your learning environments, you will use a design process with the following phases:



The course will follow these steps of the design process, but will also allow for some flexibility to support iteration throughout the quarter. By the end of the course, you will be able to use the human-centered design process to create effective learning games. You will also learn to work using an agile methodology, will practice and develop teamwork and presentation skills, and will learn to plan and self-direct complex and messy projects. While we will be focusing on the design of learning environments in this course, these skills are valuable in a wide variety of contexts, both personal and professional.

LEARNING OBJECTIVES

There are four core sets of ideas that Design of Learning Environments focuses on:

- **Iterative, Human-Centered Design Process**

You will apply the human-centered design process to problems of learning. This design process is a general approach referred to as *design thinking* that can be applied to designing products, services and strategic planning. As such it provides a basis for organizational innovation in general that you can apply across many contexts.

- **Agile team management**

Most complex problems require you to work in teams. To become an effective designer you need to be skilled at techniques to help your team communicate, plan and stay motivated. You will practice basic techniques for Lean/Agile project management including: daily stands, sprint planning, release demos, group critique, help-seeking from mentors, meeting agendas and design process books. These techniques will allow you to keep your team's happy and running smoothly.

- **Learning principles**

The principles of human cognition and social context apply whether you are designing environments to promote learning or work (which therefore look surprisingly similar). To effectively promote learning and organizational change, you will learn design principles for: creating meaningful work, increasing motivation, effective coaching, supporting development of new knowledge and skills, and creating supportive culture. Combined with the design process, these principles will allow you to create organizations that are better for learning and working.

- **Game design**

You will discover the core structures that make up games, including rules, game mechanics, incentives and rewards, actions, and interfaces. While we often think of games as being very separate from "reality", most environments we encounter can be thought of as types of games. For example, schools, workplaces, and organizations all have rules, incentives, rewards, and expected types of interaction. By thinking deeply about the design of games, we can begin to understand the systems and organizations we engage with on a daily basis from new perspectives.

COURSE STRUCTURE

This course has several complex learning objectives – all packed into 10 short weeks. As a result, it is extremely important that you stay on top of the readings and assignments. Parts of this class will be new and challenging for many of you, and for this reason, much of our in-class time will be spent working through design exercises with instructors close at hand. The tradeoff, however, is that you are expected to read all assignments and online materials carefully.

- **Group Project**
 - The purpose of this class is to help you how to design learning environments in the real world, so the focus of the class is the design project. Throughout the quarter, you will work on a team of 3-4 people. Teams will be assigned by the instructor in an effort to diversify perspectives and abilities.
- **Client Evaluation**
 - At the end of the course, your client will evaluate the quality of project and how well it meets their needs—the focus of your work will be on creating a game that will help your client more effectively teach their students core concepts in chemistry, biology, and/or computer science.
- **Team Evaluation**
 - At the end of the course, you will have the opportunity to evaluate the contributions and effort put forth by each of your teammates. This will provide you with feedback about your effectiveness working in teams.
- **Reading Assignments**
 - Almost every class has a few required readings to prepare you for the learning we will do together. Readings include the course texts, articles, and possibly design techniques on the Loft. Reading assignments will focus on the methods and knowledge you need to complete the project work.
- **Class Meetings**
 - Class meetings will incorporate design exercises, group critiques, short lectures, large and small group discussion, studio time. These are all intended to help you successfully complete your design project with support from instructors.

WARNING!

Design of Learning Environments (DoLE) is very different from other classes.

The work you do in this class will be far more ill-structured than in a typical University course. While we have done a significant amount of work to scope the design challenges, connect you with clients, and provide useful learning resources, this class will be challenging. The nature of the design problems you will be tackling, and the inevitable failures you will encounter, can make DoLE feel too hard, chaotic, or disorganized relative to what you're used to. If you want a

class with a clear path to getting an A, this is probably not for you. If, however, you are interested in doing real design work, and want an opportunity to develop your abilities and skills to create effective learning environments, then you will find this a valuable experience.

REQUIRED TEXTS

- All readings are available in Google Drive. You do not need to purchase any books for this class. However, if you'd prefer to read physical books, these are the three that we will be reading the most:
 - [How learning works](#) -- We'll be reading most of this book for class, because it explains key principles you'll need in designing learning environments.
 - [The Art of Game Design](#) -- We'll be reading three chapters from this book for class, because it introduces key principles for designing games.
- Selections from other texts will be available on Google Drive.

REQUIRED MEDIA

- **Google Drive & Docs** — We'll use Google to keep track of class notes, your design documents and a place to store some of the course materials.
- **Canvas** — We'll use this website for keeping track of grades and attendance, although most of you work will happen on the Loft.
- **Slack** — We'll use slack for quick help requests and for team communication. Log in to ls301dole.slack.com and say hello. You'll probably want to download the desktop or mobile app. If you get stuck, ask a question in Slack!

REQUIRED TECHNOLOGY

- **Laptop Computer**
 - All students in this class need access to a laptop computer. On most days, you will be required to bring your computer to class so we can work through design exercises and critiques together.
- **Video Recording Device**
 - Teams are required to record their testing sessions. Any digital video recorder will do (e.g. smartphone, laptop camera, digital camera, etc.) and each group only needs one.
- **Diagramming Software**
 - We will be creating paper prototypes and potentially other design artifacts like impact maps or service blueprints. To create these, you may need a diagramming tool. You can use presentation software like PowerPoint/Keynote. Another great option (for Mac) is Omnigraffle -- the \$59 educational license is definitely worth it.
- The class will also require software such as PowerPoint/Keynote, Word/Pages available at University Library.

GRADING

Your grade will be based on your class commitment, individual assignments, group assignments, and your peer evaluation results. ~**1000 points = 100%**. Note that assignments may change depending on how projects unfold.

1 Client satisfaction	400 pts
2 Teamwork	300 pts
3 Internal project deadlines	200 pts
4 Class Commitment (online/in-class participation, engagement, attendance)	100 pts

1. Client satisfaction

At several points in the quarter, your client will determine whether you have provided a learning environment that meets their needs. Their satisfaction with your design will partially determine how well you have succeeded in the design challenge.

1 Formative Evaluation 1	0 pts
2 Formative Evaluation 2	0 pts
3 Formative Evaluation 3	0 pts
4 Final Evaluation 4	400 pts

2. Teamwork, planning & communication

One of the goals of the class is to learn to use basic project management techniques to plan, work effectively as a team, and work effectively with coaches. At several points in the quarter, your peers will assess your effectiveness as a teammates. Their satisfaction with your contribution will partially determine how well you have succeeded in the design challenge.

1 Team evaluation 1	75 pts
2 Team evaluation 2	75 pts
3 Team evaluation 3	75 pts
4 Team evaluation 4	75 pts

3. Internal project deadlines

Group assignments will vary depending on your particular project, so we cannot say exactly what you will need to complete. A significant component of this class is planning your sprints so

that you regularly advance your own understanding of the design problem, and deliver useful products to your learners and client that are empirically tested. You will get feedback on your plans in class and define your deliverables for each two-week sprint with the instructor.

1	Sprint 1	40 pts
2	Sprint 2	40 pts
3	Sprint 3	40 pts
4	Sprint 4	40 pts
5	Final Deliverables	40 pts

4. Class Commitment: Attendance, Engagement, Online/Class Participation

Class commitment includes attending class, being engaged in class, and participating. Completing your teammates' peer evaluations also factors into your class commitment.

- **Attendance:** You are expected to attend all class sessions. If you miss class for any reason other than illness, accident, or a death in the family, you will impair your participation grade. Missing class not only reduces your opportunity to learn new things, it inhibits your teammates' ability to get their work done and may also impair your grade.
- **Engagement:** Engaging in class means that you (a) consistently arrive on time; (b) remain focused on matters at hand while in class (which means staying off Facebook, cell phones, etc.); (c) stay the entire class session, and (d) consistently show respect for classmates.
- **Participation:** You maximize your learning in this class when you actively engage (online and in-class). Active engagement means that you listen carefully to the comments and presentations of other students and seek opportunities to share your own constructive comments and feedback.

LATE WORK

Clients & mentors hate late work. Delivering your project overdue will result in poorer evaluation and less feedback (see above).

ABSENCES

Absences will result in a lowered evaluation (see above).

NORTHWESTERN POLICIES

Academic Integrity

Students in this course are required to comply with the policies found in the booklet, "Academic Integrity at Northwestern University: A Basic guide". All papers submitted for credit in this course must be submitted electronically unless otherwise instructed by the professor. Your written work may be tested for plagiarized content. For details regarding academic integrity at Northwestern or to download the guide, visit:

<http://www.northwestern.edu/provost/policies/academic-integrity/index.html>.

Accessibility Accommodations

Any student requesting accommodations related to a disability or other condition is required to register with AccessibleNU (accessiblenu@northwestern.edu; 847-467-5530) and provide professors with an accommodation notification from AccessibleNU, preferably within the first two weeks of class. All information will remain confidential.

CHANGES TO SYLLABUS

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be discussed in class and on slack.

ACKNOWLEDGEMENTS

The design of this course draws on syllabi from other instructors who have taught similar courses and subjects, including: Matt Easterday, Nichole Pinkard, Haoqi Zhang, Erik Andersen, and Mike Horn.