We delivered an introductory level game theory course as a quest-based, gamified course.

**What? Why?**

We used quest-based learning in order to:
- increase students' engagement with game theory in the classroom and outside;
- give students more agency and have students take charge of their learning;
- achieve better long-term learning outcomes.

**Gamification:** We introduced game elements into the course (see table).
- Flipped classroom: Concepts were explained mostly in videos that students watched before class, while class time was devoted to discussion, problem solving, working on side-quests, and presentations of side-quest results.

**How?**

- **100+ XP**
  - **Unit 1: Decision biases**
    - Analyze speeches of presidential candidates to see if they strategically use various common decision making biases such as loss aversion or anchoring.
  - **Unit 2: Probabilities**
    - Analyze strategies in "5-card draw," a simple version of poker.
  - **Unit 3: Explore utility**
    - Explore applications in insurance (certainly equivalent, risk premium, actuarially fair, etc.)

**Terms**

**Quest:** All activities in this course are called quests, and they range from simple and easy (such as watching a video) to more involved and demanding (such as side-quests).

**Side-quest:** A mini-project that a student or a team defines within given parameters and completes in about a week. The outcome may be a write-up, a presentation, a video, a survey, an experiment...

**Experience points (XP):** Students receive these points for completing quests, for class participation, for creating a gamified course generally. **Badge:** A "prize" for some achievement, such as completing a difficult quest, solving a puzzle, outstanding class contribution...

**Progression**

- Continuously advancing by achieving increasingly challenging tasks; "leveling up."

**Voluntary participation**

- Bernard Suits wrote: "playing a game is a voluntary attempt to overcome unnecessary obstacles." In other words, it is not a game if you have to play.

**Playfulness**

- Being in the mindset of playing is part of what makes gaming fun. This cannot be achieved simply by adding badges, points, etc. to a course; playfulness must be meaningfully incorporated into activities.

**Feedback**

- Students receive experience points for quests, badges for completing side-quests and for leveling up. "Classroom coins" for participation, extra XP for especially creative work, etc.

**Cooperation / Competition**

- Side-quests for each unit were typically done in teams, and students collaborated closely with their teams for side-quests. At the same time, students were quite competitive in moving up the leaderboard, which showed the total XP for each student.

**Volume of side-quests**

- We encouraged creativity and experimentation in side-quests. Students made videos, led in-class experiments to demonstrate concepts, did surveys on campus to document decision making biases.

**Benefits**

- Side-quests were student designed; all quests were optional. Some students were unable to "unlock" side-quests. It was possible to skip a side-quest for one unit and make it up by doing two for another unit. Almost all course activities were optional, and students were driven by their desire to advance in the "game" and to learn.

**Expected outcomes**

- Students moved through levels (see path below) by completing quests and earning experience points. Expectations for side-quests increased as the course went on.

**Student comments**

- "I really enjoyed the rewards system. I felt that I didn't have to worry about grades if I made sure to do the work, which allowed me to focus more on just learning. I also really liked how quests would work well:
- We had much greater engagement, excitement, increased autonomy, truly a different learning mindset as compared with the conventional delivery of same course.
- The leaderboard, levels, and XP worked very well to motivate students—better than grades.
- Students pursued a variety of interesting, creative side-quests and learned about topics that they were particularly interested in; they even pursued "extra side-quests" for fun and XP.

**Lessons learned**

- Some students chose to pursue fairly easy quests, while others chose to challenge themselves with more interesting ones.
- As the course progresses and topics become more complex, the job of advising, supervising and guiding side-quests becomes more and more difficult and demanding for instructors.
- Usual issues with teamwork.