

[Course Title]
[Course Number]
NYUSPS at NYU Shanghai High School Academy, Summer 2017

General Course Information

Name: Video Game Design: Think beyond screen and controller

Instructors:

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Dates: July 10th – July 15th

Class time: 9:00 AM - 5:00 PM

Room: 824 - 8th Floor

Course Description

In 2014, consumers spent more than \$21 Billion dollars on video games worldwide. Video games, an integral part of our culture, are created by some of the most innovative minds in the technology sector. This intensive game-design course gives students both a conceptual understanding of game design and practical experience in the design and development of games. While much of the commercial gaming industry is exclusively focused on entertainment, game creation and play can also serve as a powerful vehicle for learning, exploration, and collaboration. During this game-creation intensive, students work in collaboration to study, design, and create interactive digital games. Students also visit relevant places where people in Shanghai are developing digital and electronic art in a community environment. The emphasis of this course is placed on creating alternative physical interfaces that can be designed utilizing Arduino microcontroller, sensors and switches in order to create new user experiences. No programming or computer science background is necessary. Students leave the intensive with a functioning game containing their own artwork, including their own interface and controller. Develop your passion for games while learning valuable skills in collaborative design, creative development, and programming.

Course Prerequisites

Attendance is a prerequisite to participation in this course.

All students are expected to arrive to class on time and remain present for the duration of the class.

Course Structure/Method

Every class will be divided into two main sessions with breaks between. Classes will often proceed like this:

- **Morning Sessions - Lectures** (9:00-12:00)
- **Afternoon Sessions - Workshops** (13:00 - 17:00): This time will be in-class time to work on exercises or projects with assistance of the instructors. Students are expected to complete all exercises during the class and present them to the group. Late exercises will not be accepted.

Course Learning Outcomes

By the end of this course, students will be able to

- Understand basic principles of game design and user experience
- Understand and apply fundamentals of physical computing and prototyping
- Create interactive objects to rethink traditional gaming controllers
- Work in a collaborative team environment
- Demonstrate confidence in public speaking and presenting to their peers and instructors.

Communication Policy

If you have any question out of class, feel free to email instructors.
All email inquiries will be answered within 24 hours.

Course Expectations

Exercises and Presentations

Students are expected to complete all exercises during class time and present their work for instructor and peer review. During the week, students will complete 4 exercises that will be 10%, 10%, 15% and 15% of final grade.

Late exercises will not be accepted, and failure to complete assignments will be reflected in final grades.

Participation

All students are expected to arrive to class on time and remain present for the duration of the class. Students will also give feedback, ideas and suggestions to their peers regarding their exercises and projects, which will be 20% of final grade.

Final Project

Students will design and develop a video game and interactive controller.

A successful video game will be a meaningful, personal and unique interactive game, not necessarily elegant, well designed, finished products. The final project will be 30% of final grade.

Required and Recommended Material

Software:

Arduino: <http://arduino.cc/>

Scratch: <http://scratch.mit.edu/>

Resources:

Designing Interaction: <http://www.designinginteractions.com>

ITP Physical Computing: <https://itp.nyu.edu/physcomp/>

Instructables: <http://www.instructables.com/>

Materials:

Arduino kit will be provided

Grading/Assessment

Students will be graded on a Pass/Not Pass basis; final grade will be either P (Pass) or NP (No Pass). Under this grading option, students will receive a final grade of P for work that is clearly passing, i.e., which would earn a letter grade of C or better. For work below this level (i.e., equivalent to C-, D+, D, D-, or F), students will receive a grade of NP.

Your grade will be based on the following:

- **20% Participation**
- **10% Exercise 1**
- **10% Exercise 2**
- **15% Exercise 3**
- **15% Exercise 4**
- **30% Final Project**

Course Policies

- Attendance is mandatory. Every class builds off the previous one so it is vital to be present for every lesson. Unexcused absences or habitual lateness will negatively impact the knowledge gained from this class. If you are going to be late or absent, please email instructors in advance. If you have an emergency, please let instructors know as soon as you can.
- Recitations and tech Workshops attendance are absolutely mandatory. They are mainly for hands on practices, which are important opportunities to get familiar with technologies.
- You are expected to present your work in class. Explaining your work to other people is a great way to better understand the material and answer questions for yourself.
- Ask questions. If you do not understand any material completely, rise up your hand and ask.

NYUSPS Policies

“NYUSPS policies regarding the Family Educational Rights and Privacy Act (FERPA), Academic Integrity and Plagiarism, Students with Disabilities Statement, and Standards of Classroom Behavior among others can be found on the NYU Classes Academic Policies tab for all course sites as well as on the University and NYUSPS websites. Every student is responsible for reading, understanding, and complying with all of these policies.”

The full list of policies can be found at the web links below:

- University: <http://www.nyu.edu/about/policies-guidelines-compliance.html>
- NYUSPS: <http://sps.nyu.edu/academics/academic-policies-and-procedures.html>

Schedule

Class 01: Mon July 10

Morning Session

Introduction:

Review of syllabus and get to know each other
Introduction to IMA lab and fabrication room.

Lecture:

GAMES: Analog and Digital
Game Tools

In-class exercise 10%:

ANALOG GAMES

Students will work in teams and create a game that can be played without any technology

Afternoon Session

Workshop:

INTRODUCTION TO ARDUINO

Students will learn about the Arduino and basic circuit board construction using a breadboard. Through working with buttons and LED's a simple game interface will be made.

In-class exercise 10%:

Students will create a game using buttons and LED's

Class 02: Tue July 11

Morning Session

Presentations:

Students show what they did in the previous exercise

Lecture:

INTERACTIVE GAME INSTALLATIONS:

Beyond the screen and traditional controllers

Afternoon Session

Workshop:

SENSORS.

Students will learn about analog sensors and how they can be used as a switch with Arduino code.

In-class exercise 15%:

Students will create their own switch, which will be part of a collective game.

Class 03: Wed July 12

Morning Session

Lecture:

INTRODUCTION TO PROGRAMMING

Students will learn how to program and design a game using screen and keyboard.

Workshop:

We will discuss various ways physical and screen-based experiences can work together by introducing Scratch. We will use Scratch to learn how to use a programming language to create interactive and playful interfaces. We will also use Arduino to control the interface and will create our own controllers.

Afternoon Session

Field Trip:

Visit to the electronics market in Shanghai

Visit to Xinchajian hacker space

Class 04: Thu July 13

Morning Session

Lecture:

WEARABLES - Soft Electronics

Workshop:

Students will learn how to create their own sensors using fabric and making soft circuits.

In-class exercise 15%:

Students will make their own buttons using fabric, needles and conductive thread to experiment how clothing can become the interface.

Afternoon Session

Workshop: Final Projects 30%:

Students will work on final projects ideas and will make prototypes

Class 05: Fri July 14

Morning Session

Presentations:

Students will show ideas and prototypes.

Workshop:

Students will work on their final projects

Afternoon Session

Workshop:

Students will work on their final projects

Class 06: Sat July 15

Morning Session

Workshop:

Students will work on their final projects

Presentations:

Final Projects Presentations