GAME ENGINEERING (MINOR)

Program Description

Introduction
The global video game market is valued at hundreds of billions of dollars, and is experiencing unprecedented growth. Game designers and programmers are in higher demand than ever. As the industry grows and develops, so does our commitment to giving our students full access to the technology and leading information necessary for them to dive headfirst into this exciting area. Imagine working with cutting-edge technology to create one of the world's newest and most popular forms of entertainment. Our Game Engineering Minor gives you that opportunity.

Research at the Game Innovation Lab
The NYU Tandon School of Engineering's Game Innovation Lab provides a dynamic and engaging environment for faculty and the students they mentor to conduct innovative research on artificial intelligence for games. Working with industry partners and research facilities internationally, the lab provides opportunities for graduate students (and a handful of advanced undergraduates) who aspire to challenge convention and break barriers within the industry. Topics studied include procedural content generation for games, open-ended learning in virtual environments, co-creative systems where humans and AI algorithms collaborate in video games, bots that play like humans, and prediction of human experiences and playstyles from data. A good way of getting involved with research in the lab is to take the CS-GY 6943 Artificial Intelligence for Games class.

Prerequisites
Students are required to complete a minimal core curriculum in Computer Science (CS) before enrolling in the minor (or demonstrate equivalent mastery), in order to be well prepared for the game engineering coursework, as well as a Calculus course. Students completing the minor from outside of the NYU Tandon School of Engineering CS major program can request permission to apply a portion of these prerequisite credits to the overall credit total for the minor. At most six credits of the following courses may be applied to the minor (substituting for the University-wide elective and one of the core electives), provided they or an equivalent course are not required as part of the students major.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-UY 1114</td>
<td>INTRO TO PROGRAMMING &amp; PROBLEM SOLVING</td>
<td>4</td>
</tr>
<tr>
<td>CS-UY 1134</td>
<td>Data Structures and Algorithms</td>
<td>4</td>
</tr>
<tr>
<td>CS-UY 1113</td>
<td>PROBLEM SOLVING AND PROGRAMMING I</td>
<td>3</td>
</tr>
<tr>
<td>CS-UY 1123</td>
<td>PROBLEM SOLVING AND PROGRAMMING II</td>
<td>3</td>
</tr>
<tr>
<td>CS-UY 2124</td>
<td>Object Oriented Programming</td>
<td>4</td>
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Students who entered NYU Tandon prior to FA16 may take CS-UY 1124 Object Oriented Programming and CS-UY 2134 Data Structures and Algorithms instead of CS-UY 1134 Data Structures and Algorithms and CS-UY 2124 Object Oriented Programming.

Program Requirements
The Game Engineering Minor emphasizes mastery of computer programming skills relevant to Game Engineering, combined with hands-on practice building games with other in studio-style courses, and electives drawn from NYU's broad offerings in the games domain. Students are also expected to complete a prerequisite core curriculum in Computer Science (CS) to be well prepared for the other courses (or to demonstrate equivalent mastery).

<table>
<thead>
<tr>
<th>Course</th>
<th>Core Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CS-UY 3113</td>
<td>INTRO TO GAME PROGRAMMING</td>
<td>(all students are required to take this course)</td>
<td>3</td>
</tr>
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Studio Requirement
Select one of the following:
- CS-UY 3233 Game Development Studio I
- CS-UY 4553 Game Design
- OART-UT 1612 Game Development: Team Studio (Tisch School of the Arts Game Center)

Core Electives
Select two additional game engineering courses within the NYU Tandon School of Engineering CS curriculum (or equivalent courses from other NYU departments - approval required)
- CS-UY 4533 Interactive Computer Graphics
- CS-UY 4543 Human Computer Interaction
- CS-UY 4553 Game Design
- CS-UY 4613 Artificial Intelligence

University-Wide Electives
Select one additional Core Elective or submit another Game Engineering-related elective for approval by the Director of the Game Engineering Minor

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<tr>
<td>CS-UY 1113</td>
<td>PROBLEM SOLVING AND PROGRAMMING</td>
<td>3</td>
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<tr>
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<td>Object Oriented Programming</td>
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</table>

Total Credits 15

The Director of the Game Engineering Minor will maintain a list of currently approved electives. Here is a sample of relevant NYU-wide electives:
- 3D Graphics Studio I in NYU Engineering's Digital Media program
- Introduction to Game Design, Game Development Project Studio, and Games 101 in the Tisch School of the Arts Game Center
- Designing Simulations and Games for Learning in the Steinhardt Digital Media and Design for Learning program
- Social Multiplayer Games and Computer Games in the Courant Institute Computer Science Department
- CS-GY 6943 Artificial Intelligence for Games

Policies

NYU Policies
University-wide policies can be found on the New York University Policy pages (https://bulletins.nyu.edu/nyu/policies/).

Tandon Policies
Additional academic policies can be found on the Tandon academic policy page (https://bulletins.nyu.edu/undergraduate/engineering/academic-policies/).