

**Intensive Study in Behavioral Mathematics in Artificial Intelligence
Grades 8th-11th**

Behavioral Mathematics – Video Game AI and Game Theory

Game developers use many tricks to give their characters decision-making abilities. This course is for anyone wishing to know more about the mathematics behind common game behavior.

The class will introduce a raft of important techniques used by game AI developers from decision theory, game theory and utility theory. The instructors will also go into the theoretical background behind these techniques.

These topics, though complex, will be made accessible to all students; The instructors will avoid the esoteric and focus on topics which are directly useful for making actual video games.

Topics included:

DAY 1: Modeling Individual Decisions; Defining Decision; Deciding What to Decide

**DAY 2: Analyzing a Single Option: Identifying Factors; Identifying Relationships;
Building Connections; and Scoring the Option**

**DAY 3: Comparing Options; Selecting an Option; Testing the Algorithm;
Summarizing the Decision Process**

**DAY 4: Changing a Decision; Monitoring a Decision: Time Frames and the Hybrid
Approach;**

**DAY 5: Perseverance and Decision Momentum; Ignoring Futility and Building
Decision Momentum**