

Mod Design 2 teaches students how to use Java™, a professional programming language to code their own Advanced mod in Minecraft®. Students will use Eclipse, an industry-standard Java Development program, to create their own creatures with fully customized artificial intelligence and 3D Models, their own interfaces (GUIs) like crafting tables and furnaces. They will also learn advanced Java workflows to create items, blocks, and biomes. Students will have full control over the design and functionality of their Minecraft Mod.

This is a project-based course where students take on the role of creator. In addition to technical skills, students develop the creative, critical thinking, and problem-solving skills necessary to build amazing projects from start to finish. Throughout the course, students work with industry-standard tools used by professionals. If they need any help along the way with their coursework or projects, students can reach out to experts for support by e-mail, chat, or phone.

By the end of this course, students will have built an original, professional-grade project and developed the knowledge, skills, and confidence to become creators on their own, in further study, or professionally.

### Course Materials

All required materials are included with this course.

Length: One semester

## UNIT 1: WELCOME TO MOD DESIGN 2

### LESSON 1: RUN YOUR MOD

#### Study: Run Your Mod

Open Eclipse for the first time and run your mod.

Duration: 1 hr Scoring: 0 points

#### Review: Run Your Mod Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 2: BRAND NEW ITEM

#### Study: Brand New Item

Draw your mod's very first item.

Duration: 1 hr Scoring: 0 points

#### Review: Brand New Item Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 3: WRAP UP

#### Practice: Troubleshooting

Fix a broken file.

Duration: 1 hr Scoring: 15 points

#### Quiz: Quiz

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 10 points

## UNIT 2: POWER SWORD

### LESSON 1: THE PENCIL IS MIGHTIER

#### Study: The Pencil is Mightier

Use a pixel art process to create a magnificent new sword.

Duration: 1 hr Scoring: 0 points

#### **Review: The Pencil is Mightier Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### **LESSON 2: A SUPERCLASS OF SWORDS**

#### **Study: A Superclass of Swords**

Open up Eclipse and get your sword in the game.

Duration: 1 hr Scoring: 0 points

#### **Review: A Superclass of Swords Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### **LESSON 3: OPERATION OVERRIDE**

#### **Study: Operation Override**

Override and customize the behavior of your sword.

Duration: 1 hr Scoring: 0 points

#### **Review: Operation Override Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### **LESSON 4: WRAP UP**

#### **Practice: Troubleshooting**

Fix a broken file.

Duration: 1 hr Scoring: 15 points

#### **Quiz: Quiz**

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 10 points

## **UNIT 3: START YOUR ENGINES**

### **LESSON 1: LICENSE & REGISTRATION**

#### **Study: License & Registration**

Add a brand new vehicle into Minecraft.

Duration: 1 hr Scoring: 0 points

#### **Review: License & Registration Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### **LESSON 2: NEW PAINT JOB**

#### **Study: New Paint Job**

Design a shiny new texture for your vehicle.

Duration: 1 hr Scoring: 0 points

#### **Review: New Paint Job Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### **LESSON 3: SUPE UP YOUR RIDE**

#### **Study: Supe Up your Ride**

Add some code to get your vehicle into tip top shape.

Duration: 1 hr Scoring: 0 points

### **Review: Supe Up your Ride Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

## **LESSON 4: WRAP UP**

### **Practice: Troubleshooting**

Fix a broken file.

Duration: 1 hr Scoring: 15 points

### **Explore: Bonus Content**

Explore extra content from the unit.

Duration: 0 hrs 30 mins Scoring: 0 points

### **Quiz: Quiz**

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 10 points

## **UNIT 4: READY, AIM, FIRE**

### **LESSON 1: PULL SOME STRINGS**

#### **Study: Pull Some Strings**

Draw all the images required for a custom bow and arrow.

Duration: 1 hr Scoring: 0 points

#### **Review: Pull Some Strings Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### **LESSON 2: LOCK AND LOAD**

#### **Study: Lock and Load**

Make all the classes and do all the coding necessary to get your bow and arrow working in Minecraft.

Duration: 1 hr Scoring: 0 points

#### **Review: Lock and Load Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### **LESSON 3: A BIG IMPACT**

#### **Study: A Big Impact**

Override the behavior of your custom arrow.

Duration: 1 hr Scoring: 0 points

#### **Review: A Big Impact Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### **LESSON 4: WRAP UP**

#### **Practice: Troubleshooting**

Fix a broken file.

Duration: 1 hr Scoring: 15 points

#### **Quiz: Quiz**

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 10 points

## UNIT 5: MEGA MOBS

### LESSON 1: BRING IT TO LIFE

#### Study: Bring it to Life

Add a new mob into Minecraft and change its behavior.

Duration: 1 hr Scoring: 0 points

#### Review: Bring it to Life Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 2: WAR PAINT

#### Study: War Paint

Use shading techniques to make a natural-looking texture for your mob.

Duration: 1 hr Scoring: 0 points

#### Review: War Paint Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 3: MOB MENTALITY

#### Study: Mob Mentality

Override the behavior of your mob.

Duration: 1 hr Scoring: 0 points

#### Review: Mob Mentality Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 4: WRAP UP

#### Practice: Troubleshooting

Fix a broken file.

Duration: 1 hr Scoring: 15 points

#### Explore: Bonus Content

Explore extra content from the unit.

Duration: 0 hrs 30 mins Scoring: 0 points

#### Quiz: Quiz

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 10 points

## UNIT 6: ARMOR UPGRADE

### LESSON 1: FAR MORE ARMOR

#### Study: Far More Armor

Instantiate a new suit of armor with a custom armor material.

Duration: 1 hr Scoring: 0 points

#### Review: Far More Armor Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 2: FIGHT IN SHINING ARMOR

#### Study: Fight in Shining Armor

Design the texture map for your suit of armor.

Duration: 1 hr Scoring: 0 points

#### Review: Fight in Shining Armor Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 3: POTION-POWERED

#### Study: Potion-Powered

Give each piece of your armor a new potion effect.

Duration: 1 hr Scoring: 0 points

#### Review: Potion-Powered Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 4: WRAP UP

#### Practice: Troubleshooting

Fix a broken file.

Duration: 1 hr Scoring: 15 points

#### Quiz: Quiz

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 10 points

## UNIT 7: BLOCK, CROP, & BIOME

### LESSON 1: ORE-NIMATION

#### Study: Ore-nimation

Add a new animated ore block and have it generate in the ground.

Duration: 1 hr Scoring: 0 points

#### Review: Ore-nimation Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 2: CROP GROWTH

#### Study: Crop Growth

Design and program your own custom crops.

Duration: 1 hr Scoring: 0 points

#### Review: Crop Growth Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 3: BEYOND BIOMES

#### Study: Beyond Biomes

Instantiate and customize a new biome as the center of your mod.

Duration: 1 hr Scoring: 0 points

#### Review: Beyond Biomes Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 4: WRAP UP

#### Practice: Troubleshooting

Fix a broken file.

Duration: 1 hr Scoring: 15 points

### Quiz: Quiz

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 10 points

## UNIT 8: STOCK YOUR INVENTORY

### LESSON 1: POWER TOOLS

#### Study: Power Tools

Code and design some custom tools.

Duration: 1 hr Scoring: 0 points

#### Review: Power Tools Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 2: PROJECT PROJECTILE

#### Study: Project Projectile

Add a new throwable projectile into your mod.

Duration: 1 hr Scoring: 0 points

#### Review: Project Projectile Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 3: MAGIC WAND

#### Study: Magic Wand

Create a magic staff that can do anything you want.

Duration: 1 hr Scoring: 0 points

#### Review: Magic Wand Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 4: WRAP UP

#### Practice: Troubleshooting

Fix a broken file.

Duration: 1 hr Scoring: 15 points

#### Explore: Bonus Content

Explore extra content from the unit.

Duration: 0 hrs 30 mins Scoring: 0 points

#### Quiz: Quiz

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 10 points

## UNIT 9: IN YOUR INTERFACE

### LESSON 1: RECIPES FOR SUCCESS

#### Study: Recipes for Success

Add a crafting recipes for everything in your mod.

Duration: 1 hr Scoring: 0 points

#### Review: Recipes for Success Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### LESSON 2: TOOL TIPS

#### Study: Tool Tips

Add tool tips for all the items in your mod.

Duration: 1 hr Scoring: 0 points

### **Review: Tool Tips Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

## **LESSON 3: WRAP UP**

### **Practice: Troubleshooting**

Fix a broken file.

Duration: 1 hr Scoring: 15 points

### **Explore: Bonus Content**

Explore extra content from the unit.

Duration: 0 hrs 30 mins Scoring: 0 points

### **Quiz: Quiz**

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 10 points

## **UNIT 10: CUSTOM GUI**

### **LESSON 1: SKETCH THE SCREEN**

#### **Study: Sketch the Screen**

Design a new furnace block with your own custom interface.

Duration: 1 hr Scoring: 0 points

#### **Review: Sketch the Screen Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### **LESSON 2: TIE IN YOUR TILE ENTITY**

#### **Study: Tie in your Tile Entity**

Get your furnace block into Minecraft.

Duration: 1 hr Scoring: 0 points

#### **Review: Tie in your Tile Entity Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### **LESSON 3: FINESSE THE FURNACE**

#### **Study: Finesse the Furnace**

Get your GUI working properly with some new custom recipes.

Duration: 1 hr Scoring: 0 points

#### **Review: Finesse the Furnace Review**

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

### **LESSON 4: WRAP UP**

#### **Practice: Troubleshooting**

Fix a broken file.

Duration: 1 hr Scoring: 15 points

#### **Quiz: Quiz**

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 10 points

## **UNIT 11: BIG BAD BOSS**

## LESSON 1: BRING IN THE BOSS

### Study: Bring in the Boss

Design and instantiate an epic Boss.

Duration: 1 hr Scoring: 0 points

### Review: Bring in the Boss Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

## LESSON 2: SPECIAL SPAWNING

### Study: Special Spawning

Program a special blockpattern.

Duration: 1 hr Scoring: 0 points

### Review: Special Spawning Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

## LESSON 3: ADVANCED AI

### Study: Advanced AI

Program an epic boss battle.

Duration: 1 hr Scoring: 0 points

### Review: Advanced AI Review

Review key concepts and skills from the lesson.

Duration: 0 hrs 20 mins Scoring: 0 points

## LESSON 4: WRAP UP

### Practice: Troubleshooting

Fix a broken file.

Duration: 1 hr Scoring: 15 points

### Quiz: Quiz

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 10 points

## UNIT 12: MOD FINALE

### LESSON 1: STANDARDS OF EXCELLENCE

#### Study: Standards of Excellence

Learn the six standards of excellence to make your mod the best it can be.

Duration: 1 hr Scoring: 0 points

#### Explore: Bonus Content

Explore extra content from the unit.

Duration: 0 hrs 30 mins Scoring: 0 points

### LESSON 2: UPLOAD FOR REVIEW

#### Project: Upload for Review

Upload your course project for review.

Duration: 1 hr Scoring: 200 points

## UNIT 13: ADVANCED TOPICS

### LESSON 1: CUSTOM ENTITIES PART 1: MODELING

#### Study: Custom Entities Part 1: Modeling

Create a custom model using Tabula.

Duration: 1 hr Scoring: 0 points



## LESSON 2: CUSTOM ENTITIES PART 2: ANIMATING

### Study: Custom Entities Part 2: Animating

Animate your newly created custom model.

Duration: 1 hr Scoring: 0 points

## LESSON 3: MOB-PILOTED VEHICLE

### Study: Mob-Piloted Vehicle

Program a mob to pilot a vehicle.

Duration: 1 hr Scoring: 0 points

## LESSON 4: CUSTOM METHODS

### Study: Custom Methods

Design and code custom methods in Minecraft.

Duration: 1 hr Scoring: 0 points