

Mod Design 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

Project: Checkpoint

Upload your course project for review.

Duration: 0 hrs 15 mins Scoring: 30 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

Project: Checkpoint

Upload your course project for review.

Duration: 0 hrs 15 mins Scoring: 30 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