UNREAL FUTURES
CAREERS IN FASHION

Student Guide

UNREAL ENGINE

The future of fashion and creativity is digital. In this project you will be working with a team of designers, artists, and technical experts from the Fashion Innovation Agency (FIA), Burberry, and The Fabricant to create an immersive 3D fashion world. Your task is to use your imagination and Unreal Engine, the same 3D technology that powers popular games like *Fortnite*, to build a photorealistic virtual fashion experience.

Below, your team members at The Fabricant will provide you with more information and instructions. Good luck and have fun!

WELCOME TO THE FABRICANT!

My name is Kerry Murphy. I am the founder of The Fabricant, the world's first digital-only fashion house. Everyone on our team is thrilled to be working with you! We could really use your help on one of our new projects.

Here at The Fabricant, we use the real-time 3D creation tool, Unreal Engine. Many people use Unreal Engine to create video games, but we use it to create hyper-realistic virtual fashion. As a digital fashion house, all the clothes, fabrics, and fashion we create are entirely digital. We have worked with brands like Under Armour, Adidas, Puma, and many others to help them design and showcase their collections virtually. To do this, we need to create realistic virtual environments complete with good lighting, cameras, and animations. Your task is to help us design and build a new environment.

To help get you up to speed, the team has created a few introductory video resources and tasks for you. On the next page, you can also find a list of 'Key Terms' our team put together. As you go through the exercises on the coming pages, if you're unsure what a particular term means just come back to the Key Terms section below for help.

Excited to have you on our team!

Key terms:

Actor: any object that can be placed into a level. Examples include a simple mesh, a character, or a camera.

Asset: a piece of content (sound, texture, or 3D model) that is used in Unreal Engine.

Epic Games: video game/software developer and creator of products like Unreal Engine.

Interactive 3D: a digital environment that allows for real-time 3D interaction. Examples of interactive 3D include video games, virtual reality (VR), and augmented reality (AR).

Level: a gameplay (or fashion environment) that you define. Levels contain everything that a user can interact with or see.

Real-time rendering: the process by which digital 3D images are converted (in real time) to 2D images, allowing for immediate feedback and live interaction.

Rig: a control system needed to create and modify character animations.

Sequencer: a tool in Unreal Engine that allows you to create, edit, and preview animation sequences in real time.

Unreal Engine: a real-time 3D creation tool.

UI (User Interface): the point of contact that allows the user to interact with computer software. Examples include the touch screen on a phone that can be pressed to activate underlying software or applications.

INTRODUCTION TO UNREAL ENGINE IN FASHION

Hi there! I'm Sallyann Houghton, and I work on Business Development at Epic Games (the creators of Unreal Engine). I help companies like The Fabricant to get the most out of Unreal Engine. We've made four introductory videos to help get you oriented to Unreal Engine and how it is used in the fashion industry. We've also created a video about some exciting careers in fashion, and a video containing advice for how to break into the fashion industry. You can find these videos below.

- **Kickoff**
- **Careers**
- **Behind the Scenes**
- **Advice**

Before we move on to having you actually work on the project, let's make sure you feel comfortable with what you've learned so far. To do that, answer the questions below and check out the Project Overview on the next page.

1. **What is the main benefit of real-time 3D tools compared to those that are not in real time?**

    a.) Higher resolution when rendering
    b.) More sophisticated editing tools
    c.) Rendering that is almost instantaneous
    d.) More colors to choose from

2. **What is interactive 3D?**

    a.) A static 3D picture or puzzle
    b.) A 3D video that can be viewed using special 3D goggles
    c.) A flat image that looks different from different angles
    d.) A 3D space that can be explored or changed in real time

3. **In the 'Behind the Scenes' video, Costas referred to "rails" when using cameras. What are rails?**

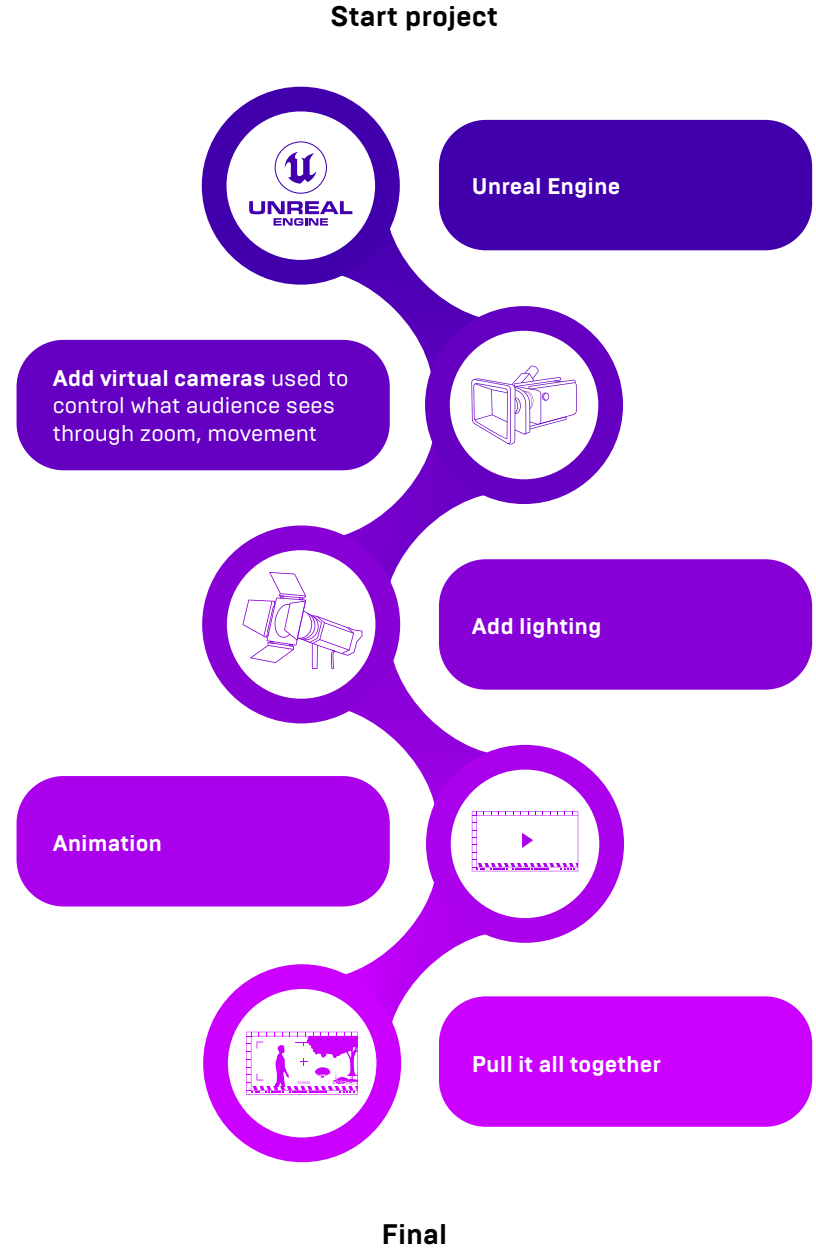
    a.) High-definition cameras
    b.) Cameras with lighting built into them
    c.) Paths that your camera takes within the virtual environment
    d.) Paths that any human figures walk in the virtual environment

4. **After watching the 'Careers' video, do you think you have to be an experienced fashion designer to enter the fashion industry?**

    a.) Yes – fashion experience is required for anyone who enters fashion
    b.) No – fashion experience can be helpful, but technological and 3D skills are highly valued as well

PROJECT OVERVIEW

Now that you're up to speed on how Unreal Engine is changing the fashion industry, it's time for you to roll up your sleeves and get to work. We'd like you to create a digital fashion experience that showcases a Fabricant garment in an exciting virtual location, much like you saw Costas do in the Behind the Scenes Video.



PART 1:
INSTALLING UNREAL ENGINE

Now that you're settled and ready to begin, Sonali will guide you through installing and using Unreal Engine.

Let's get started! The first step to starting your project will be to download Unreal Engine. In the video below, I'll walk you through the installation of two key tools you'll need: the Epic Games launcher and Unreal Engine.

Note: If you're using a Mac, please follow **these instructions** before viewing the video.

▷ **Unreal Learning Kit 1**

▷ **Recommended Hardware and Software Specifications**

1. **What is the goal of this project?**

    a.) To digitally create a virtual fashion experience
    b.) To learn how to hand-draw characters and animated sequences using pencil and paper
    c.) To learn how to write computer code
    d.) To learn how to design clothing

2. **What is the "Library" in the Epic Game Launcher?**

    a.) A collection of books that summarize the theory behind interactive 3D
    b.) The tab where you can buy or download new content to add to your projects
    c.) The home for all your Unreal Engine versions, projects, and content downloaded from the Marketplace
    d.) A page containing news about Unreal Engine

PART 2: GETTING TO KNOW UNREAL ENGINE

Great job downloading Unreal Engine! It can seem a bit overwhelming at first but you'll get the hang of it. I made the videos below to get you comfortable with using Unreal Engine. Once you become familiar with the basics, we'll get you started on creating the virtual fashion experience!

▷ **Unreal Learning Kit 2**

▷ **Unreal Learning Kit 3**

▷ **Unreal Learning Kit 4**

1. **Sonali showed us how to use the W, A, S, and D keys in the viewport. What were these keys used for?**

    a.) To add lighting to the viewport
    b.) To zoom into and out of the layout
    c.) To move up and down in the viewport, but not left and right
    d.) To move in all directions in the viewport

2. **If you hold the left mouse button and press W, which way do you move?**

    a.) Left
    b.) Right
    c.) Forward
    d.) Backward

3. **Which button is used to focus on a particular actor in the viewport?**

    a.) A
    b.) W
    c.) B
    d.) F

4. **Which statement below best describes an actor?**

    a.) People that you place into your project
    b.) Shapes that you place into your project
    c.) Anything that you can place into your level
    d.) An icon used to find out more information

5. **Using the image below, where can you go to access tutorials to learn more about using the Epic Games Launcher?**

    a.) Region 1-left side
    b.) Region 1-right side
    c.) Region 2
    d.) Region 3

PART 3:
STARTING YOUR PROJECT AND SETTING UP YOUR SCENE

You're learning so fast! It took me *weeks* to learn how to use the Viewport and navigate the launcher! Great job! In the next few steps, we'll work towards creating your digital fashion environment. Once you've created a basic version of this environment and feel comfortable using Unreal Engine, we'll have you make your own environment that you will then send to The Fabricant.

Making a 3D environment from scratch can seem complicated. We'll have to think about camera movement, lighting, and other visual effects to make the environment look appealing and realistic. In the next steps, I'll break down the process for you starting with how to set up your virtual environment. To get started, watch the video below and answer the questions that follow.

▷ Video link here

To add the Garment assets to your Fashion project:

1. Click on this **Marketplace Project File Link**.
2. Click on the "Free" button.
3. Click on the "Add To Project" button.
4. Select your Fashion project.

1. **You need to create all the assets you want to use by yourself. There are no pre-existing assets you can load into your environment.**

    a.) True
    b.) False

2. **Where can you go to download assets for free?**

    a.) Library tab
    b.) Learn tab
    c.) Marketplace tab
    d.) Twinmotion tab

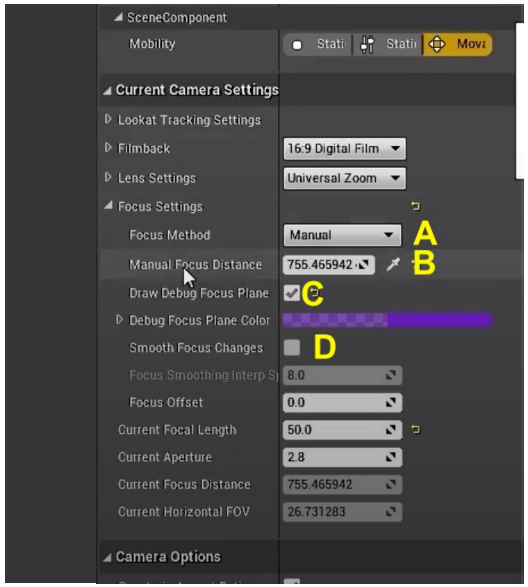
3. **After you download assets (like garments) into your project, where would you find them?**

    a.) Content Browser
    b.) Library tab
    c.) Learn tab
    d.) Marketplace tab

PART 4:
VIRTUAL CAMERAS

Now that you're familiar with the project and how to download assets, let's learn how to add and manipulate virtual cameras to help our scene come to life. Virtual cameras give us the ability to showcase our environment however we'd like, allowing the camera to move, zoom, and focus on what we want our audience to see. So, let's begin!

▷ **Video link here**



1. **Where would you go to add a camera to your environment?**
    a.) "Basic" tab
    b.) "Cinematic" tab
    c.) "Lights" tab
    d.) "Visual Effects" tab

2. **What was the benefit of creating the cinematic viewport and splitting the original viewport into two viewports?**
    a.) The cinematic viewport will show what the camera sees at all times
    b.) The cinematic viewport is the only place where you can adjust lighting
    c.) The cinematic viewport is a higher resolution version of the original viewport, giving you greater detail of your scene
    d.) Having two viewports lets you see more of your scene

3. **The width of the camera image divided by the height is the:**
    a.) Aperture
    b.) f-Stop
    c.) Aspect ratio
    d.) The focal length

4. **The aperture of a camera refers to:**
    a.) The size of the opening of a lens
    b.) The focal length
    c.) The aspect ratio of the image created
    d.) The resolution of the image created by the camera

5. **To manually pick an object in your scene that you want the camera to focus on, what should you click on? Use the image to the right to see the options.**
    a.) A
    b.) B
    c.) C
    d.) D

PART 5:
INTRODUCTION TO LIGHTING

You already have the camera added? That was fast. Great job! However, cameras can only capture the environment we create. So, we need to make sure that our environment looks the way we want it to by altering key parameters like the lighting. In this tutorial, I'll show you the basics of three-point lighting, one of the most commonly used solutions to lighting a scene.

▷ **Video link here**

1. **To highlight a subject in a scene, you typically use:**

    a.) A point light and a rim light
    b.) 3-point lighting
    c.) A spotlight
    d.) 4 directional lights

2. **Which of the following is the primary lighting source in 3 point lighting:**

    a.) Key
    b.) Fill
    c.) Rim light
    d.) The Sun

3. **The key light is usually placed:**

    a.) Directly behind the subject being lit
    b.) Behind but off to the side of the subject being lit
    c.) Directly in front of the subject being lit
    d.) In front of but off to the side of the subject being lit

4. **To create an edge of light around the subject, you need to add a:**

    a.) Key light
    b.) Fill light
    c.) Bounce light
    d.) Rim light

PART 6: ANIMATION

So far, we have created a beautiful but static environment; nothing is moving. To add the finishing touches and make our fashion environment really come to life, we are going to use an editor called Sequencer to add animations.

▷ **Video link here**

1. **Which of the following is true about Sequencer?**

    a.) It is similar to video editing software
    b.) It helps you create animated videos
    c.) You can add cameras within the Sequencer
    d.) All of the above

2. **What is a rig rail?**

    a.) High definition cameras
    b.) Cameras with lighting built into them
    c.) Paths that your camera takes within the virtual environment
    d.) Paths that any human figures walk in the virtual environment

3. **When we first set up a rig rail, the garment was going into and out of frame. What did you need to change to keep the garment in frame as the camera moved around?**

    a.) Enable look at tracking
    b.) Add new keys to the garment so that it moves with the camera
    c.) Add another camera
    d.) Add another light

4. **Which button in the Sequencer should you use to render your animation?**

    a.) 
    b.) 
    c.) 
    d.) 

PART 7: CREATING YOUR OWN ENVIRONMENT

So far, you have learned how to recreate a virtual environment. But we still want to modify the piece to be more dynamic. That's where you come in.

Now, our team wants you to take everything you learned about Unreal Engine, animation, lighting, cameras, and Sequencer to make your own version of the environment.

Here are a few versions we think The Fabricant might be interested in:

1) In the tutorials, we used fun lighting and a natural landscape to create a glamorous scene. Can you adjust the lighting and the cameras to change the mood of the scene? Can you make it look dark, spooky, or scary? What would the scene look like in other parts of the virtual environment, or with different camera angles?

2) In the tutorials, we included only one garment. Can you add more garments in different parts of the environment to highlight multiple assets? Maybe you could then add more complicated splines and rails to have your camera go into and out of different rooms as it shows different garments.

3) What other ideas do you have to show the client? Here, there are no instructions. Our team is relying on your brain and your creativity. That's why you're here! If you think of a great idea, go for it! Create and be ready to pitch that idea to The Fabricant. They might just love it.

Our team is counting on you but we know you're going to do great!