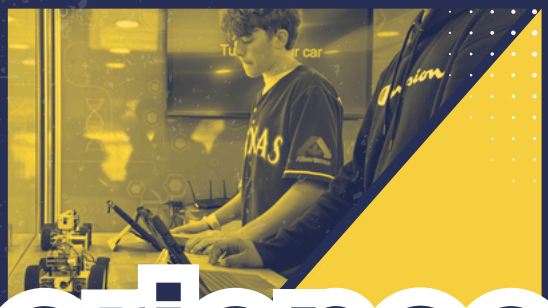




# Learning Experience CATALOG



sparknc.org

Fall 2026 Edition





spark NC | IGNITING FUTURES IN TECH



# Table of Contents


Getting Started with the SparkNC Catalog ..... Page 3

Learning Experience Pathways ..... Page 3

Learning Experience Categories ..... Page 4

Difficulty Level Guidance ..... Page 5

Learning Experiences Listed by Cateorgy ..... Page 6

Learning Experiences Listed by Pathway ..... Page 7

SparkPoints and Passion Projects ..... Page 8

All Learning Experiences ..... Starts on Page 9



App Building: Design and Bring Your App to Life Without Code
Apple App Showcase
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Cracking the Code: Journey into Cryptography
Digital Makerspace Exploration
Engineering Tomorrow
Ethics and Leadership Conference
Exploración del Makerspace Digital (Spanish version)
Food is Fun! Digital Games for Food and Health
Fundamentals of Artificial Intelligence/Machine Learning
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Fundamentals of Cybersecurity
Fundamentals of Data Analytics
Fundamentals of Game Development
Fundamentals of Software Development
Fundamentals of UX/UI Design
Health Hacks for Esports
Hooked on Design: The Case of the Cyber Cafe
Learning by Playing: Designing Video Games
Makey Makey Intermediate | Interactive Systems Engineering
Makey Makey Makerspace
Mindful Media
Next-Level App Building - Getting Apps Ready for the App Store
Oracles and Prophecy: Chance and Fate in Video Games
Questioning Narratives: Stories, Video Games, and Environ. Justice
Ready, Set, App!
Real Talk: AI and Mental Health
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Soundtracks for Games: From OST to myOwnST!
Spark Teamship with District C
SparkNC Exchange Conference
SparkNC Student-Run Hackathons
Stepping Into the Arena: Fundamentals of Esports
Tableau and the Census
Talk Engine EDU: Develop a Character using AI
Technovations
Unreal Futures: Careers in Advertising using Unreal Engine
Unreal Futures: Careers in Animation using Unreal Engine
Unreal Futures: Careers in Fashion using Unreal Engine
Voodou, Zombies and Video Games
What is a Video Game?

Getting Started with the SparkNC

# CATALOG

SparkNC is a **new way to do school.** As a Spark Scholar, you are in the lead role of designing your learning pathway. You can follow your interests, build the skills you want to learn, and chart your own path toward a high-tech career of your choice, all while earning high-school credit. Through SparkNC, you can tap into a powerful inter-district network of educators and tech professionals who will shape your learning journey.

To help you build your path toward success, the SparkNC Catalog helps you understand the choices you have – from the **way you want to learn new content** to the **pathways and topics available for you to explore** and guidance on **how to create your own learning experiences** so you that you can make the best choices for you!

To earn high school computer science credit toward graduation, you must complete ***Spark 1 Core***, earn six units, and pull it all together in your ***portfolio***. You can complete your units in any order - but your portfolio will be strongest if you add to it as you complete learning experiences!

## Learning Experience Pathways

- Artificial Intelligence
- Computer Systems Engineering
- Cybersecurity
- Data Analytics
- Design UX/UI
- Exploring Tech Fields
- Game Development & Design
- Software Development

# Modular, Stackable Units

The SparkNC catalog provides more than 50 learning experiences so you can dive into new experiences right away! You can explore as many learning experiences as you'd like.

There is no penalty for stopping a learning experience if it turns out not to be a good fit.

This allows you to explore, find new areas of interest, complete and stack units you're excited about and ignite your future in tech!




# Learning Experiences Categories

## On Demand

### Level Up Your Skills Anytime, Anywhere On-Demand

The majority of the learning happens on the computer but these are real skills for the real world!

- Code Art with Meaning
- Unreal Engine: Careers in Fashion
- Cracking the Code

## Hands-On

### Design and Build with Hands-On Learning

Hands-on learning experiences are blended learning experiences. Some learning may be online while including hands-on experiences in and beyond your SparkLab.

- Beginner Makey Makey
- Intermediate Makey Makey
- Betabox Self-Driving Car

## Experiential

### Connect, Explore, and Experience the Real World

These live and immersive learning experiences happen in real time and many are fully in-person. They build your peer and professional networks while honing durable success skills like communication and adaptability.

- Field Trip Experiences
- Hackathons
- Conferences
- Spark Teamship

## Difficulty Level

All learning experiences should take about 15-20 hours of work and provide the resources needed to be successful, but some may still be more challenging than others. SparkNC has provided a difficulty rating for the units to guide your decision making!

- ★ No tech experience needed, just curiosity.
- ★★ Basic computer skills are helpful.
- ★★★ Familiarity with software or tech is beneficial.
- ★★★★ Some tech & troubleshooting skills are expected.
- ★★★★★ Extensive tech skills and problem-solving required.

## Learning Experience vs. Unit




Units are the way SparkNC measures progress toward earning your SparkNC high school credit! Most learning experiences are worth one unit of credit, but some are worth two! Learning Experiences with this icon, are worth two units!

**Note:** You will see **unit** and **learning experience** used interchangeably.






## EXPERIENTIAL

- Apple App Showcase
- Betabox | Pathfinder: The Adventure
- Ethics and Leadership Conference
- Ready, Set, App!
- Spark Teamship with District C
- SparkPoints
- SparkNC Exchange Conference
- SparkNC Student-Run Hackathons

## HANDS-ON

- Betabox | Coding the Future: Adventures in Self-Driving Cars
- Betabox | Robotic Arm: Adventures in Human Computer Interaction
- Engineering Tomorrow
- Makey Makerspace
- Makey Makey: Hands-on Computer Systems Engineering
- Makey Makey Intermediate | Interactive Systems Engineering

## ON DEMAND

- App Building: Design and Bring Your App to Life Without Code
- Be-YOU-ty and the Bot
- Build a Rube Goldberg Machine in Unreal Engine
- Build an AI Model Level 1: Store-Bought (from a Template)
- Build an AI Model Level 2: Homemade (from Scratch)
- Build Your First 3D Game: Learn Collision
- Code Art with Meaning
- Cracking the Code: A Journey into Cryptography
- Fundamentals of Artificial Intelligence/Machine Learning
- Fundamentals of Computer Systems Engineering
- Fundamentals of Cybersecurity
- Fundamentals of Data Analytics
- Fundamentals of Game Development
- Fundamentals of Software Development
- Fundamentals of UX/UI Design
- Digital Makerspace Exploration
- Exploracion del Makerspace Digital (Spanish version)
- Genius Hour: From Passion to Prototype using Design Thinking
- Getting Started Creating Robots in Unreal Engine
- Hooked on Design: The Case of the Cyber Cafe
- Mindful Media
- Next-Level App Building - Getting Apps Ready for the App Store
- Real Talk: AI and Mental Health
- Roadtrip Nation Career Exploration
- Stepping Into the Arena: Fundamentals of Esports
- Tableau and the Census
- Talk Engine EDU: Develop a Character using AI
- Technovations
- Unreal Futures: Careers in Advertising using Unreal Engine
- Unreal Futures: Careers in Animation using Unreal Engine
- Unreal Futures: Careers in Fashion using Unreal Engine

**IN PARTNERSHIP WITH** UNCG | SCHOLASTIC ESPORTS ALLIANCE

- Food is Fun!: Digital Games for Food and Health
- Game Over: Game Mechanics, Death, and Video Games
- Gods, Heroes, and Monsters: Mythology in Video Games
- Health Hacks for Esports
- Learning by Playing: Designing Video Games
- Oracles and Prophecy: Chance and Fate in Video Games
- Questioning Narratives: Stories, Video Games, and Environmental Justice
- Soundtracks for Games: From OST to myOwnST!
- Vodou, Zombies and Video Games
- What is a Video Game?

# Learning Experience Pathways

spark NC

## Artificial Intelligence & Machine Learning

- Betabox | Coding the Future: Adventures in Self-Driving Cars
- Be-YOU-ty and the Bot
- Build an AI Model Level 1: Store-Bought (from a Template)
- Build an AI Model Level 2: Homemade (from Scratch)
- Fundamentals of Artificial Intelligence/Machine Learning Under Revision
- Real Talk: AI and Mental Health
- Talk Engine EDU: Develop a Character using AI

## Computer Systems Engineering

- Beginner Makey Makey: Hands-on Computer Systems Engineering
- Betabox | Robotic Arm: Adventures in Human Computer Interaction
- Makey Makerspace
- Makey Makey Intermediate | Interactive Systems Engineering
- Fundamentals of Computer Systems Engineering Under Revision

## Cybersecurity

- Cracking the Code: Journey into Cryptography
- Fundamentals of Cybersecurity

## Data Analytics

- Fundamentals of Data Analytics
- Tableau and the Census

## Design UX/UI

- Fundamentals of UX/UI Design Under Revision
- Genius Hour: From Passion to Prototype using Design Thinking
- Hooked on Design: The Case of the Cyber Cafe
- Mindful Media

## Exploring Tech Fields

- Betabox | Pathfinder: The Adventure
- Digital Makerspace Exploration / Exploracion del Makerspace Digital (Spanish version)
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- Ethics and Leadership Conference
- Roadtrip Nation Career Exploration
- SparkNC Exchange
- SparkNC Student-Run Hackathons
- Spark Teamship with District C
- Technovations

## Game Development & Design

- Build a Rube Goldberg Machine in Unreal Engine
- Build Your First 3D Game: Learn Collision
- Fundamentals of Game Development Under Revision
- Getting Started Creating Robots in Unreal Engine
- Stepping Into the Arena: Fundamentals of Esports
- Unreal Futures: Careers in Advertising using Unreal Engine
- Unreal Futures: Careers in Animation using Unreal Engine
- Unreal Futures: Careers in Fashion using Unreal Engine
- UNC-G Learning Experiences in Game Development and Design

## Software Development

- App Building: Design and Bring Your App to Life Without Code
- Apple App Showcase
- Code Art with Meaning
- Fundamentals of Software Development Under Revision
- Next-Level App Building - Getting Apps Ready for the App Store
- Ready, Set, App!

**6 Units = 1 High School Credit**

# SparkPoints & Passion Projects

## Design Your Own Learning Journey

## SPARKPOINTS

### Any Pathway

SparkNC and SparkLab Leaders create opportunities for you to earn SparkPoints at events, field-trips, programs and live or virtual learning experiences. These events will earn a SparkPoint for each hour of activity (up to 4 points max per activity or event). **Collect 12 points** and **complete checkpoint reflection after each** to earn this unit of credit.

Your path will be unique and based on your interests!

## PASSION PROJECT UNIT

### Any Pathway

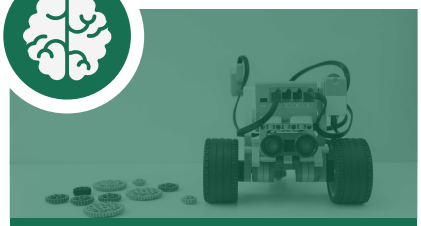
Build your own learning experience using SparkNC's design guidelines. There are so many ways you can lead your own learning by creating a personalized experience just for you!

Are you interested in building your tech skills beyond the SparkNC offerings? Take a deep dive into a high-tech field or related topics through extended research, skills practice, software development and more.

Identify your goals, design your learning experience, get it approved by your SparkLab leader and you are on your way!



# Artificial Intelligence & Machine Learning



## Betabox Coding the Future: Adventures in Self-Driving Cars

Difficulty Level ★★★★☆

Earn 2 Units

Get ready to build your own self-driving car! In this unit, you'll learn about exciting new technology that's changing the world. You'll explore Automation, Artificial Intelligence, and Mechatronics, and work on building your own car.

You'll learn how to program the car to navigate obstacles, and use computer vision to make smart decisions. Along the way, you'll have the choice to explore important topics like Ethics, Government Policy or Sustainability.

By the end of the unit, you'll have a deep understanding of the cutting-edge technology behind self-driving cars and the skills needed to pursue a career in the high-tech industry. Get ready to take on the challenge and join the exciting world of self-driving cars!




## Be-YOU-ty and the Bot

Difficulty Level ★★★☆☆

Welcome to the world of AI in the beauty industry! In this unit, you will explore how AI is revolutionizing cosmetics and expanding high-quality skincare to people of all skin tones. From virtual try-on tools to personalized product recommendations, AI is changing the way we look at beauty.

Throughout this journey, you will examine the capabilities of AI as well as the controversial ethical questions that arise in this ever-changing field. Experience hands-on activities using Teachable Machine and develop an AI-powered business plan that just might reshape the beauty industry. Enroll in this unit and we'll see you in the future of technology and beauty.



## Build an AI Model Level 1: Store-Bought (from a Template)

Difficulty Level ★★★★☆

Get to know Machine Learning (ML) and Artificial Intelligence (AI) in this unit and begin to build your own AI and ML models! You will learn to use platforms like Google Teachable Machine that will make it possible to move from not knowing anything about AI models to building your own in this unit.

You will develop AI/ML models to perform tasks such as evaluating text and identifying and verifying images.

# Artificial Intelligence & Machine Learning



## Build an AI Model Level 2: Homemade (from Scratch)

Difficulty Level ★★★★★

Let's build your own Artificial Intelligence (AI) models from scratch–even if you have no coding experience! AI models can learn from data, recognize patterns, make decisions, and perform tasks that normally require human intelligence.

In this hands-on unit, you will begin to learn Python programming and apply new skills to a variety of AI applications that do interesting things like facial recognition, medical image analysis, spam detection, and more.




## Real Talk: AI and Mental Health

Difficulty Level ★★☆☆☆

How can artificial intelligence help safeguard and improve our mental health? Dive headfirst into the fascinating world of AI and its power to transform mental healthcare in this unit. Here, you will uncover how AI supercharges treatment, from predicting the best medications for patients to powering therapy chatbots.

Use AI tech to boost your own wellbeing and ignite your inner activist with a creative, AI-powered poster campaign that challenges mental health stereotypes. You will make a lasting impact by spreading the word about how AI can promote positive mental health for your community.




## Talk Engine EDU: Develop a Character using AI and Machine Learning

Difficulty Level ★★☆☆☆

This incredible opportunity will take you "under the hood" and into the beta phase of developing TeamLab, a simulation learning experience designed to support SparkNC students. This cutting-edge simulation brings ChatGPT, animated characters, and WebGL together to build a program specifically designed for schools.

We all know that educational games could be more impressive. We have decided that is not good enough and have made it our mission to bring fantastic, interactive educational games to schools! How are games made for education, and how can we improve them?

Play with character development, bring it to life, and give feedback on a revolutionary AI model that could change how you do school!

# Artificial Intelligence & Machine Learning



## Fundamentals of Artificial Intelligence and Machine Learning

Difficulty Level ★★★☆☆

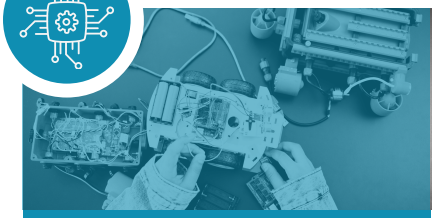
Under Revision

Looking to unlock the secrets of technology that powers the likes of Alexa, Siri, and self-driving cars? You're in the right place! In this unit, we'll delve into the world of Artificial Intelligence (AI), exploring how machines learn, recognize patterns, and communicate with humans.

With interactive activities and project-based learning, you'll uncover the remarkable capabilities of AI and discover how it's transforming industries like healthcare, transportation, and finance.



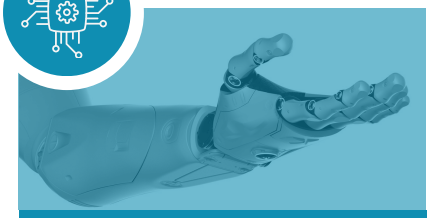
# Computer Systems Engineering



## Beginner Makey Makey: Hands-on Computer Systems Engineering

Difficulty Level ★★☆☆☆

Do you prefer hands-on learning? Do you like to tinker and play with cords and wires? In Beginner Makey Makey, you will use the Makey Makey invention kit to collaborate with others and create new gadgets while learning about the basics of computer systems engineering.



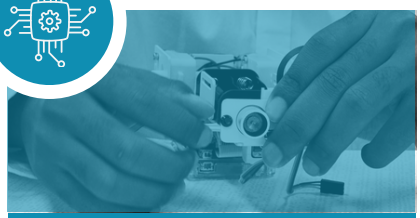
## Betabox | Robotic Arm: Adventures in Human Computer Interaction

Difficulty Level ★★★★☆

Earn 2 Units

Get ready to build a robot that could work in a factory—but desktop-sized! If you've ever wondered about real-life robots—how they work, what they do, or how to program them—this is the unit for you!

You will build a robotic arm, learn to control and program it in different ways, and go up against your classmates in Robot Rumbles to find out who's the best robot operator! You will also ask questions about the social and economic impact of robots in this hands-on, action-packed unit!



## Makey Makerspace

Difficulty Level ★★★☆☆

This unit is a competition-based exploration into the Makey Makey universe of projects. Working in teams, you and your lab mates will let your imaginations run wild to build the very best Makey Makey invention.

This unit is meant for beginners and experts.

Ask your lab leader about helping to run your lab's competition!

# Computer Systems Engineering



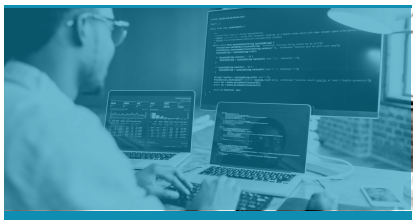
## Makey Makey Intermediate: Interactive Systems Engineering

Difficulty Level ★★★☆☆

Earn 2 Units

Do you have some experience with Makey Makey and want to continue your learning? Are you just naturally adventurous and want to jump in the deep end?

Makey Makey is a microcontroller that allows you to create and invent. In this unit, you will play with switches and sensors while hacking a stuffed animal and designing an alarm system. You will also strengthen your Scratch block coding skills and connect the physical and digital computing worlds through hands-on invention.



## Fundamentals of Computer Systems Engineering

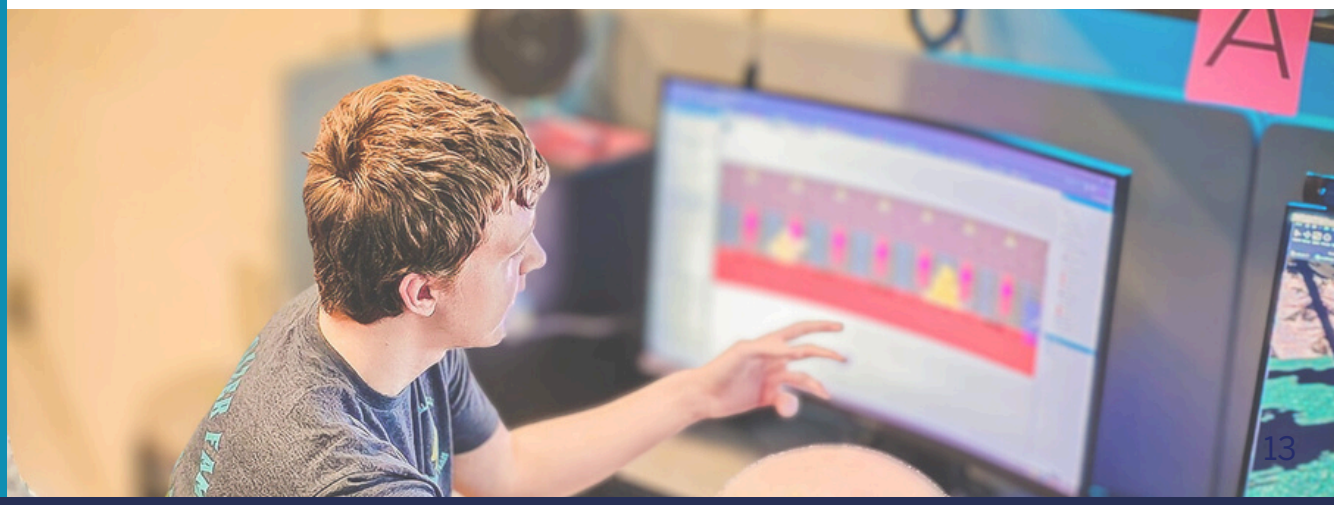
Difficulty Level ★★★☆☆

Under Revision

Computer Systems Engineers are like the builders of the tech world, making both the physical computer parts (hardware) and the programs (software), work together smoothly.

As a computer systems engineer, you're not just typing code on a computer; you're using technology to make awesome things that can change the world like a new video game console, an app that can help predict the weather, or building a virtual world that feels just like real life.

So, if you're excited about creating with computers and shaping the future, a career in computer systems engineering could be the perfect fit for you!



Cybersecurity

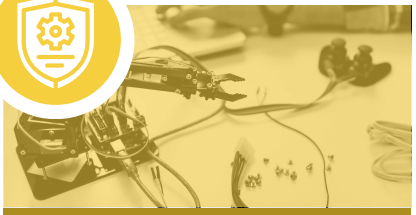


## Cracking the Code: Journey into Cryptography

Difficulty Level ★★★☆☆

Travel with Dr. Crypton and the Wakandan cipher squad through a series of missions, in this super cool cryptography unit inspired by the amazing world of Black Panther.

You will become swift, strong, and always ready to defend your information, making sure it stays hidden from any potential villains as you learn how to decode the mysteries behind various ciphers. Ready to accept the mission? Enroll today!



## Fundamentals of Cybersecurity

Difficulty Level ★★☆☆☆

Step into the world of cybersecurity through this hands-on, beginner-friendly unit. Explore the fascinating history of cryptography, from ancient codes to modern-day encryption. Learn the basics of programming through Code.org's Hour of Code, then bring your skills to life by building and coding a LockBox using a servo motor and micro:bit. You'll also experiment with offline cipher tools and techniques to understand how information can be hidden—and discovered. Whether you're a curious coder or a puzzle-solving pro, this unit builds a strong foundation in digital and physical security.

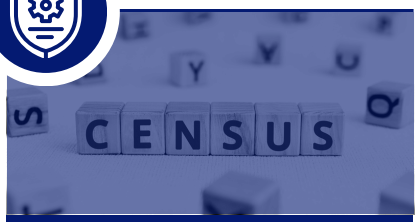
# Data Analytics



## Fundamentals of Data Analytics

Difficulty Level ★★★☆☆

**Fundamentals of Data Analytics** offers a highly **hands-on, project-based** introduction to the world of **data analytics**, teaching you the skills needed to turn data into meaning. You'll get to be a data detective and learn how to **collect** information using tools like microbits and then **show** it using charts and graphs. We'll do a variety of real-world projects, like running simple physics tests and even checking how much sun a plant gets. By the end, you'll know how to read and use data to answer big questions, and you'll even **create your own project** about something you care about! If you like solving puzzles and doing projects that mix technology and science, you'll love this unit!




## Tableau and the Census

Difficulty Level ★★★☆☆

Through the use of publicly-available census data, you will learn the basics of the software Tableau and data visualization concepts so you can learn to tell compelling stories about your community with data and engaging visuals.

You will learn the types of data that have been included in the U.S. Census throughout the history of the United States and how census data (and the collection, analysis, and implications of the data) has been vital in the evolving status of our democracy.



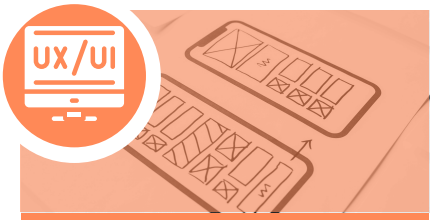



## Fundamentals of UX/UI Design

Under Revision

Explore the fundamental UX/UI design concepts that professionals use to create engaging user experiences. You will learn and apply real-world tools and techniques employed by website and app designers and product developers and explore career opportunities in UX/UI design.

Difficulty Level ★ ★ ★ ★ ★




## Genius Hour: From Passion to Prototype using Design Thinking

Genius Hour was created at Google to give employees the opportunity to learn more about something they were passionate about. In this unit, you will explore your own passions through helping to solve a complex problem using the Design Thinking process.

This unit will lead you through identifying a problem, interviewing and empathizing with those affected, and prototyping a solution!

Difficulty Level ★ ★ ★ ★ ★




## Hooked on Design: The Case of the Cyber Cafe

Are you curious about how websites and apps are designed to grab your attention and keep you engaged? Do you want to know how your brain reacts to different design elements? If so, this unit is an exciting journey into the world of User Experience Design!

You will learn all about the basics of design, technology, and psychology and how they all come together to create the digital experiences you use every day. Through a scenario of a school considering adding a Cyber Cafe, you will learn these concepts, assess the costs and benefits of adding a Cyber Cafe and and build a case for or against the Cafe.

Difficulty Level ★ ★ ★ ★ ★



# Mindful Media

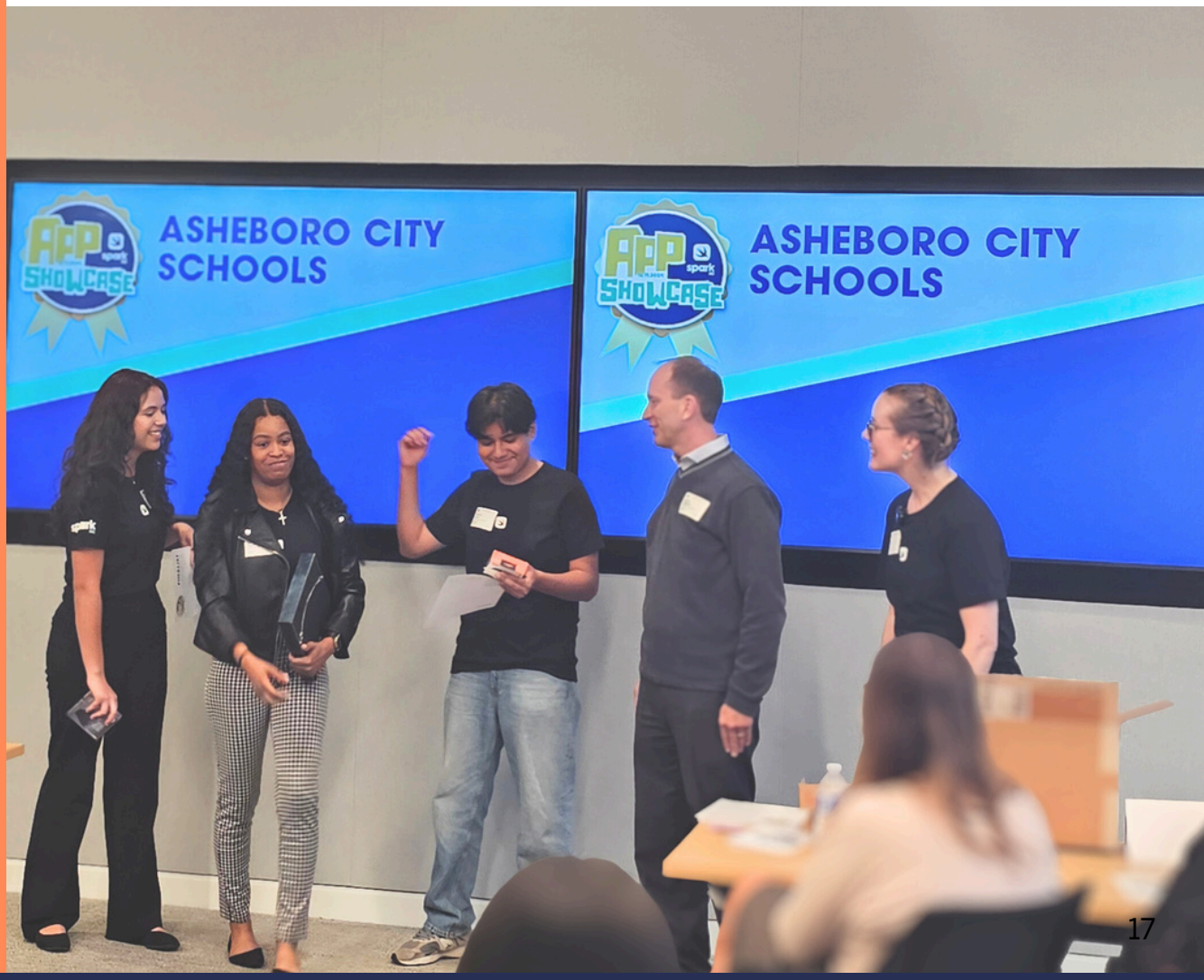
Difficulty Level

Share a post. Wait for comments. Check for likes. Repeat. Do you recognize this pattern? Are you curious about how the addictive design of technology can impact your mental health?

In this unit, you will unlock the mysteries of addictive technology design and explore ways to maintain a healthy relationship with technology. In the end, you will be equipped with the knowledge and skills to make better decisions about your digital life.

Don't miss out on this exciting opportunity to explore the intersection of technology, design, and mental health!





# Exploring Tech Fields



## Betabox Pathfinder

Are you planning on attending a Betabox on-site field trip or have you already attended one? In this unit, you will practice an exploration mindset and learn new tools to discover your interests and purpose.

From learning about the ethics of self-driving cars to researching and sharing about high-tech careers, this unit does a little bit of everything. At the end, you will even get a chance to talk to our chatbot and learn which additional Betabox units to explore.

Difficulty Level ★ ★ ★ ☆ ☆




## Digital Makerspace Exploration / Exploracion del Makerspace Digital (Spanish version)

Available in English and Spanish. You will have the opportunity to experience a Makerspace in the virtual realm. As you explore, fail, try again, and succeed, you will keep a portfolio to log your work and reflect on your experiences.

This is a great unit for those who aren't quite sure yet what you like and don't like in the tech world. Following 12-13 hours of exploration and completing your portfolio, you will have the opportunity to match yourself to new units on SparkNC based on your interests in the virtual Makerspace.

Difficulty Level ★ ☆ ☆ ☆ ☆



## Engineering Tomorrow

Engineering Tomorrow gives you awesome, hands-on projects designed by actual engineers in cool, diverse fields like Robotics, Cybersecurity, and AI. To earn unit credit, simply complete five of these experiences in the lab, plus one live event that is an interaction with an engineering professional.

Start building your skills and exploring where a high-tech career could take you!

Difficulty Level ★ ★ ☆ ☆ ☆



## Ethics and Leadership Conference

Difficulty Level ★ ☆ ☆ ☆ ☆

Each fall, the North Carolina School of Science and Mathematics presents a student conference on ethics and leadership (ELC). SparkNC partners with NCSSM to provide a unit of credit to Spark Scholars who attend these conferences when they are related to our high-tech pathways.



## Roadtrip Nation Career Exploration

Difficulty Level ★ ★ ☆ ☆ ☆

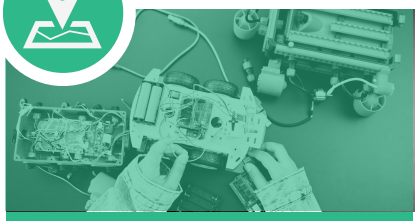
Whether your future feels uncharted, or you have a clear view of your goals, this project-based course developed by Roadtrip Nation will help you discover your interests, explore career possibilities, and talk to someone you admire about how they found their path—so you can discover yours.



## SparkNC Exchange Conference

Difficulty Level ★ ★ ☆ ☆ ☆

Join fellow SparkNC Scholars at UNCW for a high-energy, conference-style event filled with collaboration, exploration, and innovation. Experience interactive sessions, meet industry leaders, and connect with peers from across North Carolina. The Exchange is your chance to showcase creativity, build skills, and discover exciting high-tech pathways for your future.



## SparkNC Student-Run Hackathons

Difficulty Level ★★★☆☆

Students will form groups to participate in a SparkNC Hackathon. Students will consult with industry experts in order to develop a tool that will address a problem experienced locally in their school or outside community.

Students will have opportunities to participate in Just in Time Training on whatever pathway they choose for developing their tools in order to fortify their software development or cybersecurity knowledge.

## Spark Teamship

Difficulty Level ★★★☆☆

Earn 2 Units

Spark Teamship is a reimagined internship experience where students work in teams to solve real business problems presented by a real tech company.

Under the guidance of an expert coach, you explore the tools and mindsets necessary to create and pitch a solution to the company.

Students can get unit credit for participating in **up to two** Teamship experiences. Each Teampship experience is worth two units of credit.



## Technovations

Difficulty Level ★☆☆☆☆

Imagine your life without your favorite technological innovation or technovation like your cell phone, social media, video games, or even YouTube.

All of these technovations were made with good intentions to make our lives easier, discover new things, and stay entertained. In this unit, you will go from researching a technovation to redesigning it.



## Build a Rube Goldberg Machine in Unreal Engine

Difficulty Level ★★★★☆

When it comes to Rube Goldberg machines, the wilder and wackier, the better. The machines are named after American cartoonist Rube Goldberg, whose cartoons often depicted comically over-complicated contraptions built to carry out simple tasks through a convoluted series of chain reactions.

Perhaps the most well-known example is the board game Mouse Trap. With the introduction of our new Unreal Learning Kit: Rube Goldberg Machines, you can now build virtual contraptions in Unreal Engine, with the tools that game developers use to make games like Fortnite.

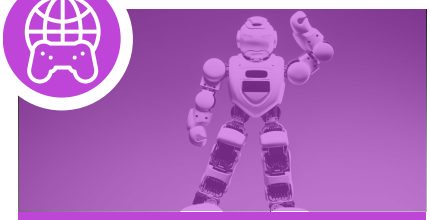


## Build Your First 3D Game: Learn Collision

Difficulty Level ★★★★☆

Hour of Code is a worldwide initiative that aims to teach coding skills to people of all ages in a fun way. Now you don't have to wait for that designated time during the school year.

This unit will guide you through a series of lessons that will help you create your first 3D platform game in Unreal Engine. Ready? Set. Code!



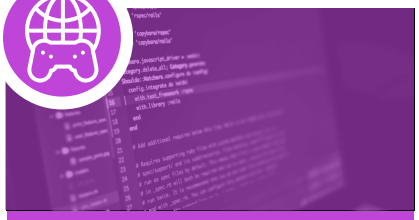
## Getting Started Creating Robots in Unreal Engine

Difficulty Level ★★★★☆

Physical robotic systems can be expensive and difficult to maintain. So why not go virtual?

In this unit, you can learn how to code and train virtual robots for sumo battles, autonomous decisions, and more as you get a grasp on the same engineering and physics concepts that make robotics such a powerful tool.

# Game Development & Design



## Fundamentals of Game Development

Difficulty Level ★★★☆☆

Under Revision

Step into the awe-inspiring realm of Game Development, where your imagination takes the helm and transports players to mind-bending virtual worlds of wonder and adventure.

In this unit, you'll explore the fundamentals of game design, get hands-on experience with development tools, and uncover potential career pathways in the high-tech industry. Through hands-on activities and projects, you'll learn how to bring your ideas to life. Let the games begin!



## Stepping Into the Arena: Fundamentals of Esports

Difficulty Level ★★★☆☆

Do you want to learn more about the competitive world of esports? In this unit, you will explore the history and evolution of esports, develop an understanding of healthy gaming behaviors, delve into professional career pathways, and develop a final project based on the topic of your choice. You will learn about high-tech careers related to esports and develop your adaptability and communication skills. Ready? Then step into the arena!

# Game Development & Design




## Unreal Futures:
### Careers in Advertising, Animation, and Fashion using Unreal Engine

Difficulty Level ★★★★☆

In these three separate Units--Unreal Futures: Careers in Advertising, Animation and Fashion--you'll explore how professionals are using Unreal Engine to upend approaches to designing advertisements, animating 3D projects and designing digital-only fashion for sale in the virtual world!

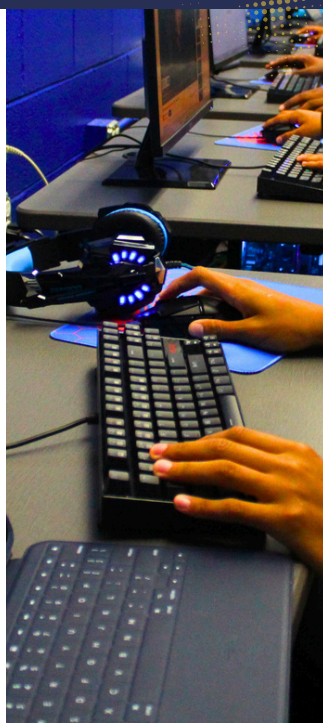
While exploring these exciting fields, you will build your skills at creating advertisements, designing fashion items and animating videos in Unreal Engine. We can't wait to see what you create!

Earn 2 Units

- Animation Only

SparkNC partnered with the University of North Carolina Greensboro's Scholastic Esports Alliance and the Network for the Cultural Study of Videogaming to develop these 10 learning experiences in game development, design and esports. These units are are rooted in content from courses offered in UNCG's Video Gaming and Esports Studies Minor.





## Food is Fun!: Digital Games for Food and Health

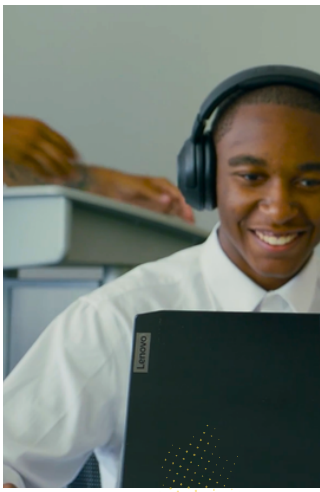
Difficulty Level ★ ★ ★ ☆ ☆

Eating food is something that everyone does. Eating can impact the way you feel and your short and long-term health. This unit will explore the essentials of eating and health, and how you can develop software tools and gaming experiences that are engaging and fun while helping people have positive and healthy experiences with food.

## Game Over: Game Mechanics, Death, and Video Games

Difficulty Level ★ ★ ☆ ☆ ☆

We have all been there: die, respawn, repeat – this is the life-cycle of a gamer. All of these experiences of death and dying have been engineered and designed by game designers. This unit will introduce you to the basics of game mechanics by showing you the purposes deaths serve in video gaming. Over the unit, you will find out what makes death in games meaningful, design your own mechanic for a video game and explore its impact on players and the gameplay.



## Gods, Heroes, and Monsters: Mythology in Video Games

Difficulty Level ★ ★ ☆ ☆ ☆

Video games are a mix of software and storytelling. Great games have fascinating worlds and stories, often inspired by mythologies from different cultures. Let's dive into the ancient mythology of Hades, the Greek god of the underworld. Is he truly meant to be scary, icy, and oppressive? And if not, why do we portray him that way in video games? In this unit, we'll explore ancient mythology and how it influences video games. We'll discover how gods, heroes, and monsters shape these games, and inspire you to create your own game using these exciting elements!

## Health Hacks for Esports

Difficulty Level ★ ★ ☆ ☆ ☆

This unit will teach you how to remain a healthy video gamer throughout your athletic career. You will learn how to make healthy eating choices, stay mentally healthy, and perform exercises for muscles to prevent injury or correct pain brought on by poor posture while video gaming. You then will apply what you learn to design a video game that teaches these concepts to others.

## Learning by Playing: Designing Video Games

Difficulty Level ★ ★ ★ ☆ ☆

Do you like to play video games? Ever wonder how designers create interactive video games? Would you like to design a video game but don't have any programming skills? If you said yes, then look no further. This unit is for you! All you need is your imagination and creativity. Through playing video games, you will learn the principles behind them. Then you will tinker and experiment with your design ideas to create a functional 2D video game.



Did you ever make a decision using a Magic 8 Ball? Do you look for random signs or chance encounters to decide what to do? Video games are full of 'randomizing' elements, also known as oracles, that guide or control decision-making. They can even give a glimpse into the future. In this Unit, we will look at actual encounters with ancient oracles in video games, including the Pythia at Delphi, featured in Assassin's Creed: Odyssey and Titan Quest. We will consider how in the ancient world people consulted oracles to make decisions, and how this connects to an essential part of game design: using randomness to control outcomes. You will learn how oracles function, and then design an oracle of your own!

**Oracles and Prophecy: Chance and Fate in Video Games**

Difficulty Level

Have you ever played a video game and wondered about the history behind the story it tells? In this unit, you will learn to examine how video games set on farms depict rural and farming culture and consider how they reflect reality or are presenting a fiction. You will also develop your skills at literary techniques to help you analyze fiction and nonfiction to build your ability to think critically about the video games you play every day.

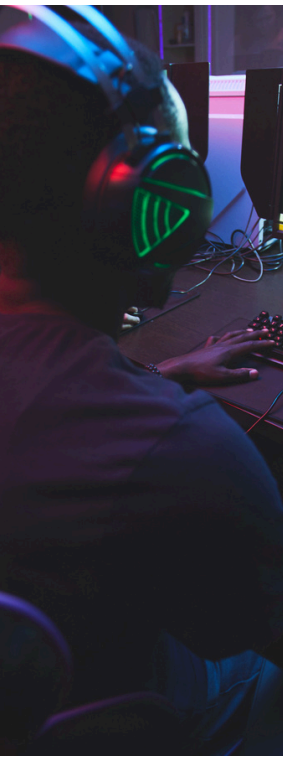
**Questioning Narratives: Stories, Video Games, and Environmental Justice**

Difficulty Level

DIY OST! That's right, in this unit, you will model OSTs (original soundtracks) to create your own soundtracks for video games. Soundtracks provide the mood and backdrop of a video game, and can also help link characters, ideas, actions, and environments. You will do focused listening on popular game OSTs, then start with a "drag and drop" approach using pre-existing and provided clips. Then you will edit and process your clips to personalize your tracks, and finally sync them to a gameplay video.

**Soundtracks for Games: From OST to myOwnST!**

Difficulty Level



Learn about the history of the zombie from its roots Haitian vodou through the development of zombies in modern day film and video games such as Resident Evil. You will engage with historical data and modern cultural artifacts to inform your own design of a video game idea featuring zombies! Build your understanding of high-tech industries of animation and game design and your skills at character design and world-building.

**Vodou, Zombies and Video Games**

Difficulty Level

Get ready for an epic journey into the world of video gaming. Explore why we study video games and how they tell stories. Unravel the magic of game mechanics and experience the thrill of playing your favorite games. Engage in fun assignments, dive into young adult fiction, and ponder the ethical aspects of gaming. By the end, you'll grasp how narratives and game elements combine to create imaginative entertainment.

**What is a Video Game?**

Difficulty Level

# Software Development



## App Building: Design and Bring Your App to Life Without Code

Difficulty Level ★★★★☆

We all use mobile apps, but have you ever thought of how they are created? In this unit, you will brainstorm an idea for a mobile app and design it like a real developer.

You will learn user interface and experience design skills within a tech industry-standard tool called Figma. Not only that, you will then have the opportunity to bring that app to life by building your app design with a no-code, drag-and-drop app builder called Thunkable that helps people with no coding experience dip their toes into the software development ocean.



## Apple App Showcase

Difficulty Level ★★☆☆☆

Earn a chance to pitch at Apple! Work in a team of 2 -4 Spark Scholars to design and prototype an app using Keynote that helps solve this year's challenge: improving the mental health crisis currently facing young people. You will brainstorm, plan, and create a prototype of your solution—no coding is necessary! —and then pitch your ingenious idea to a panel of judges and share your work with the entire community.



## Fundamentals of Software Development

Under Revision

Welcome to the world of software development! Jumpstart your journey to becoming a "code monkey" as you learn about the methodologies, fundamentals, components, and tools used in software development.

You'll glean essential skills and knowledge to thrive in this dynamic field and delve into the core concepts and practices that drive the software development process.

# Software Development



## Code Art with Meaning

Difficulty Level ★★☆☆☆

In this unit you will explore the fascinating world of JavaScript and how it plays an important role in the tech industry.

By learning p5.js, a JavaScript library for creative coding, you'll gain the power to create interactive graphics, animations, and games, enhancing your programming skills while unleashing your creativity.

As JavaScript continues to be one of the most widely-used programming languages in web development, mastering it opens doors to a wide range of exciting career opportunities in the ever-evolving tech industry.



## Next-Level App Building Getting Apps Ready for the App Store

Difficulty Level ★★★★★

Have you ever wanted to create an app and share it with the world but you don't know how to code? No worries, we've got you!

In this unit you will dive into how to create a fully-functioning app with a no-code mobile app builder called Thunkable. You will discover how to think like a real developer. Not only that, you will get the chance to experience how to use APIs which are the backbone of many apps. Then, when everything is said and done, you will have the opportunity to launch your app to the app stores and even be able to accept transactions.



## Ready, Set, App!

Difficulty Level ★★★★☆

Earn 2 Units

Each year The North Carolina Business Committee for Education hosts the **Ready, Set, App! challenge** - a mobile app development competition for high school students sponsored by Lenovo™. Student groups are asked to develop a mobile app using a mobile app development platform (e.g., MIT App Inventor) to solve a problem in their school or community.

Students will pitch their app ideas for the opportunity to present at the final competition held at Lenovo headquarters in the spring.

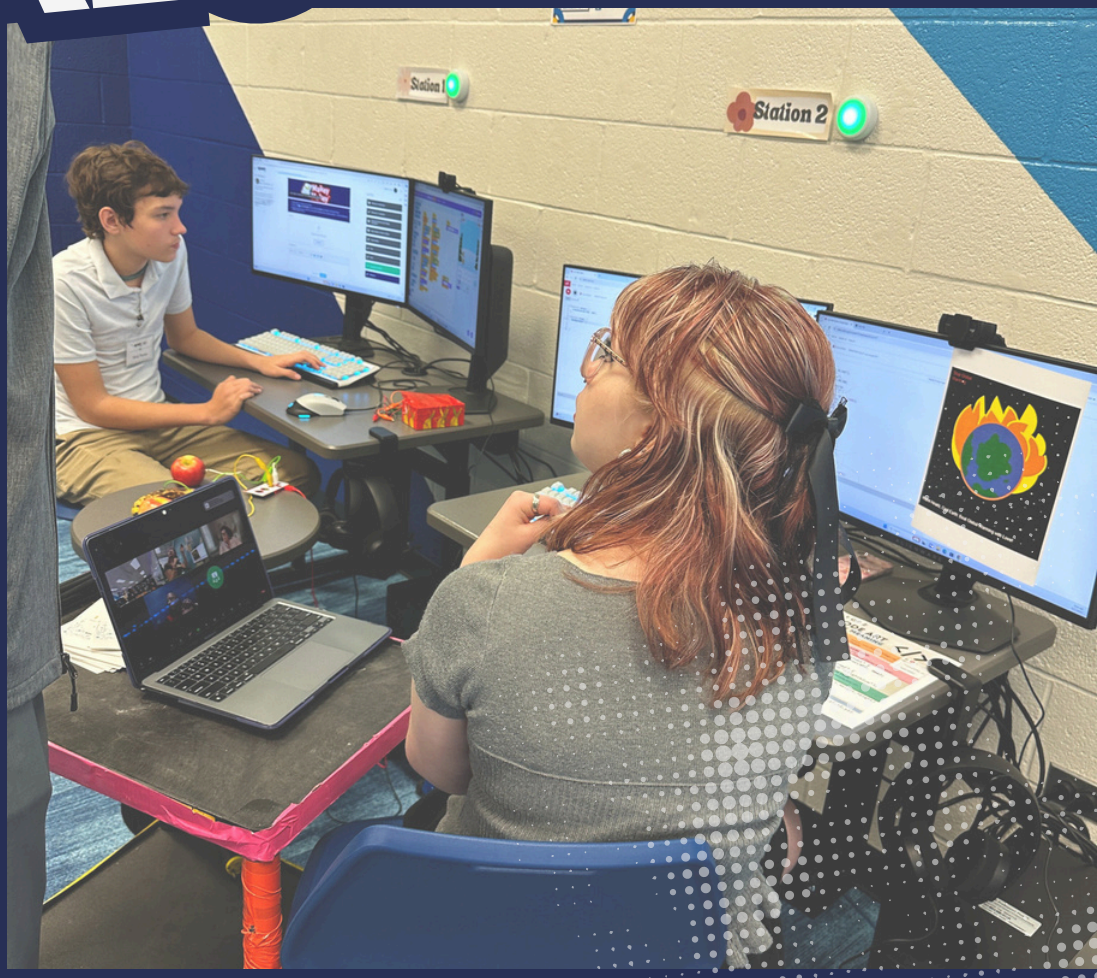
SparkNC students who participate in the Ready, Set, App! challenge earn two units of credit!

# Learning Experience CATALOG

**Fall 2025 Edition**

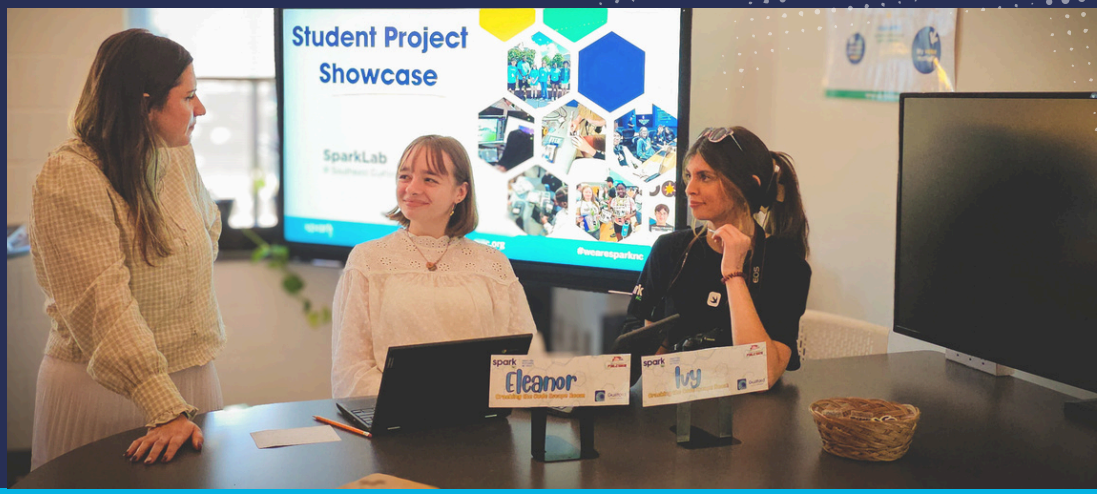
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