

# 2023-24 COURSE GUIDE R2I2

## Innovation:

Creativity

Collaboration

Leadership

Entrepreneurial Spirit

Global Impact



Richland Two Institute of Innovation (R2I2)  
Student Innovation Center  
763 Fashion Drive Columbia, SC 29229

## R2i2 Course Offerings

***A note about this guide: The first course name listed in black with the course number next to it is how the SC Department of Education recognizes the course. The course names in quotes are the R2i2 titles and are used when discussing and marketing the courses.***

### Next Energy Engineering

**Clean Energy Systems 1 638000CW or 638000HW: “Next Energy Engineering 1” (Honors or College Prep)**

This project-based course in solar, thermal, chemical and mechanical sources of clean energy teaches students how to apply physics, geography, chemistry, biology, geometry, algebra and engineering fundamentals to solve local and global energy problems. Students learn the most efficient and appropriate use of energy production as they explore the relevant relationships among work, power and energy. Students will engage in a wide variety of hands on projects and lab activities that both test their knowledge and illustrate the interrelationships between the various forms of clean energy.

**Credit: 1**

**Clean Energy Applications 2 638100CW or 638100HW: “Next Energy Engineering 2” (Honors or College Prep)** This course builds on the foundation of Course 1 and introduces Electric Vehicles, nuclear power, bioenergy, fuel cells, AC/DC power generation, heat transfer and the laws of thermodynamics. In addition, students now use chemical and thermal energy principles to create, store and use energy efficiently to power a variety of mechanical and electrical devices. Students will engage in a variety of hands-on design projects to demonstrate principles using advanced technology hardware and software, including optimization of a road-ready EV. **Prerequisite: Clean Energy Systems or permission of instructor Credit: 1**

### **3D Printing & 3D Design w/CATIA** *(All classes/sections are taught concurrently during each period)* *May have MTC Dual Credit Option*

**Mechanical Design 1 617200CW: “3D Printing and 3D Design w/CATIA (V.5) I”**

The 3D Printing and Design I course at R2i2 will educate students on the use and application of CATIA V.5: a multi-platform computer-aided design (CAD)/computer-aided manufacturing (CAM)/computer-aided engineering (CAE) software suite. Students will design parts and assemblies according to the specifications of each assignment and manufacture these parts using 3D-Printing/Additive Manufacturing. Students will prepare for professional certification in CATIA v5 in Mechanical Design 2 and receive more information on the pursuit of careers in this industry. **Credits: 1**

## **Mechanical Design 2 617300CW or 617300HW: “3D Printing and 3D Design w/CATIA (v.5) II” (*Honors or College Prep*)**

The 3D Printing and Design II course at R2i2 will advance student competency in the use and application of CATIA: a multi-platform computer-aided design (CAD)/computer-aided manufacturing (CAM)/computer-aided engineering (CAE) software suite. Students will expand on level 1 competencies with advanced topics including Kinematics, Parametric modeling, and Additive Manufacturing Certification. Students will test for professional certification in CATIA and be introduced to the professional careers within these industries. *Additional coursework will be required of honors students.* **Credits: 1**

## **Print Reading and Sketching: 620900EW (Dual Enrollment Class with MTC: EGT 106)**

This course covers the interpretation of basic engineering drawings and sketching techniques for making multi-view pictorial representations. This course also includes an introduction to engineering technology, and an introduction to Computer Aided Design (CAD). **HS Credits: 1**

## **Intermediate CAD Applications: 844600EW (Dual Enrollment Class with MTC: EGT 156)**

This course builds on the fundamentals of computer-aided drafting and includes such concepts as 3D modeling and user interface customization. This course also provides the foundation for advanced computer-aided drafting concepts and applications. *Prerequisite: Print Reading and Sketching Dual Credit* **HS Credits: 1**

## **Computer Programming and Coding**

### **Computer Programming 1 505000CW: “Apple App Development”**

Students will build apps for Apple’s mobile devices using the language and tools of professionals – Swift and X-code. Students experience an authentic workplace environment applying the skills of problem-solving, collaboration, and communication to industry best practices, like paired programming and rapid iteration. The apps students build grow in complexity throughout the semester, culminating in an app showcase, where students demonstrate an app they built – just like professionals do at technology events. **Credit: 1 (Satisfies Computer Science Graduation Requirement)** (Will change to virtual Python course if section needs to be collapsed)

### **Computer Programming 1 506400CW: “App Development Using Python”**

Students will dive into the fundamentals of programming concepts while learning text based coding using Python. Students will apply skills such as computational problem solving, collaboration, and communication. Student projects will increase in complexity throughout the semester, culminating in creative tasks that allow them further exploration of various topics driven by their interests. **Credit: 1 (Satisfies Computer Science Graduation Requirement)**

## **Culinary**

*This course is offered in blocks. Blocks offer 2 credit hours.*

### **Baking and Pastry 572300CD**

Baking and Pastry for secondary students is a course that provides students an opportunity to develop foundational skills needed for a seamless transition to a postsecondary program, workforce, or military. Students will develop advanced skills in safety and sanitation in addition to management and professionalism. Specialized content includes units on formulas and techniques, basic baking principles,

specialized dietary baking, breads, desserts and pastries, and advanced techniques for specialty cakes, confections, piping, plate presentation, and flavor pairing. Concepts are aligned with competencies from the American Culinary Federation (ACF) Education foundation assessment, and ACF Retail Commercial Baking Certification. **Credits: 2**

*An Advanced Baking and Pastry 2 class will be offered for students who have successfully completed the first course at R2i2. The course is scheduled for Spring of 2024. If the course does not meet the minimum enrollment requirement by the drop/add period deadline in August, it will be converted to a Baking and Pastry 1 class. See Power School post May 24<sup>th</sup> for course number.*

## Business

### **Social Media & Business 503400CW: “Marketing and Social Media”**

This course covers an introduction to the field of marketing with a detailed study of the marketing concept and the processes of product development, pricing, promotion, and marketing distribution.

Additionally, students will participate in creation of a vast array of social media sites, resources, applications and tools, as well as evaluating the impact, effectiveness and design of various elements of advertising strategy and campaigns. Students will learn to use social media and content marketing to grow businesses and enhance consumer engagement. **Credits: 1**

### **Fashion Marketing: 541000CW: “Fashion Marketing”**

Students will learn about the unique way in which fashion products are marketed. Key marketing theory is studied with special emphasis on the interface between design/creativity and the commercial imperative. Fashion marketing theory is about understanding and satisfying consumer needs. There is a focus on developing an understanding of the fashion consumer, consumer behavior, segmentation, targeting and positioning. Internal and external influences on individual and organizational decision making are also considered. Fashion marketing considers the fashion product, the nature of pricing (with costing and global economics in mind), the way the product is branded, communicated and promoted to consumers and the environment in which it is sold. The global nature of the fashion industry and its impact on marketing is considered as well. **Credits: 1**

**FUNDAMENTALS OF BUSINESS, MARKETING, AND FINANCE COURSE CODE (IFPAC): 68F0 (SDE Innovative Course)** This course allows students to begin their understanding of basic financial concepts through the application of personal finance standards and indicators and then progress by expanding that knowledge and applying it towards corporate financial analysis. Finally, students will be able to merge both personal and corporate financial analysis in a real-world setting by participating in a stock market simulation. **Credits: 1**

## STEAM

### **B.E.A.T.S. & Animation 688700CW (innovative course # approved by SDE): “Animation and B.E.A.T.S. (Beginning Engineering of Audio Technology and Sound)”**

Animation & B.E.A.T.S (Beginning Engineering in Audio Technology & Sound) is a unique course which brings together two universally powerful tools for communication, creativity and entertainment. This hands-on and product-focused course offers students the opportunity to develop knowledge and skills in 2D animation and music production. On completion of this course students will be able to showcase their creativity, technical

and practical skills, design and critical thinking skills, as well as their employability skills to pursue further training in animation and music production if they so choose, or follow careers in various exciting STEAM-based fields. **Credits: 1**

## [R2i2 Dual Enrollment Options Not Listed In This Guide: USC-Sumter](#)

***Courses subject to availability contingent upon University staffing.***

*Dual Enrollment Courses offered at R2i2 but not taught by R2i2 Instructors are communicated to School Counseling Departments as information becomes available. These Dual Enrollment courses are offered through University of South Carolina-Sumter and taught by USC Professors on the R2i2 Student Innovation Center's campus. To enroll in any dual enrollment courses, students must meet specified criteria established by USC-Sumter AND R2i2. Parents/guardians should check with their student's university or colleges of interest to see if dual enrollment/credit courses will be accepted.*

**NOTE: The student must receive credit in both Eng. 101 & Eng. 102 to meet the Eng. 4 requirement for a high school diploma.**



**Please email questions to the R2i2 Administrative Team:**

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