School Year 2020-2021

Course Name	Engineering Applications	**Course Code**	21.47200
School Name	Macon County High School	**Teacher Name**	Ramesh Kathroju
School Phone Number	478-472-8188	**Teacher Email**	rkathroju@macon.k12.ga.us
School Website	http://mchs.macon.k12.ga.us/	**Teacher Extension**	5238

Course Description:

Engineering Applications is the third course in the Engineering and Technology Pathway. Students will apply their knowledge of Science, Technology, Engineering, and Math (STEM) to develop solutions to technological problems. Solutions will be developed using a combination of engineering software and prototype production processes. Students will use market research, cost benefit analysis, and an understanding of the design cycle to create and present design, marketing, and business plans for their solutions. A capstone project will allow students to demonstrate their depth of knowledge of the engineering design process and prepare them for future opportunities in the field of engineering.

Course Prerequisites: On grade level for math and science, Foundations of Engineering and Technology and Engineering Concepts.

GPS Standards: Complete GADOE standards document can be found at the following link: http://www.gadoe.org/Curriculum-Instruction-and-Assessment/CTAE/Documents/Engineering-Applications.pdf

Standards

· **STEM-EA-1** Demonstrate employability skills required by business and industry.
· **STEM-EA-2** Demonstrate and follow safety, health, and environmental standards related to the STEM workplace and apply specific engineering tools, machines, materials and processes in a safe and orderly manner to formulate, analyze, and verify engineering practices and solutions.
· **STEM-EA-3** Identify and explore career opportunities in one or more engineering career pathways to build an understanding of the opportunities available in the STEM workplace.
· **STEM-EA-4** Apply knowledge of the engineering design process to solve engineering/ technological problems in the STEM workplace.
· **STEM-EA-5** Employ planning and time management skills and tools to enhance results and complete work tasks.
· **STEM-EA-6** Apply oral, written, and visual communication skills to obtain, interpret, and present information to and from intended audiences.
· **STEM-EA-7** Develop and apply detailed plans to solutions for design problems using mathematical and scientific concepts.
· **STEM-EA-8** Develop appropriate models.
· **STEM-EA-9** Design and construct a testable prototype.
· **STEM-EA-10** Understand engineering impacts of social, economic, design and environmental issues.
· **STEM-EA-11** Explain the impact of business and marketing on engineering design.
· **STEM-EA-12** Explore how related career and technology student organizations are integral parts of career and technology education courses. Students will develop leadership, interpersonal, and problem-solving skills through participation in co-curricular activities associated with the Technology Student Association (TSA).

Curriculum Overview

The following academic concepts will be covered. **THIS IS ONLY A GUIDE AND IS SUBJECT TO CHANGE.**

CURRICULUM OVERVIEW
Unit 1 – Safety, Portfolio Development, Applied Technology
Unit 2 – Robotics
Unit 3 – Problem Solving and Mechanical 3D Modeling & Prototyping
Unit 4 – Project Management, Business and Marketing
Unit 5 – Issues in Technology and Engineering

BOARD-APPROVED INSTRUCTIONAL MATERIALS

Title	Engineering our World
ISBN	978-1-63563-471-6
Replacement Cost	$50.00
Online book and/or resources	https://www.g-w.com/technology-engineering-our-world-2020 and various other sources
Online student access code (school specific)	N/A

GRADING SYSTEM: The Macon County School District believes that the most important assessment of student learning shall be conducted by the teachers as they observe and evaluate students in the context of ongoing classroom instruction. A variety of approaches, methodologies, and resources shall be used to deliver educational services and to maximize each student's opportunity to succeed. Teachers shall evaluate student progress, report grades that represent the student's academic achievement, and communicate official academic progress to students and parents in a timely manner through the electronic grading portal. **See Board Policy IHA**.

GRADING CATEGORIES	***GRADE PROTOCOL**		
Formative Assessment - 0% **Assessment During Learning – 25%** **Guided, Independent, or Group Practice – 45%** **Summative Assessment or Assessment of Learning– 30%**	**A** **B** **C** **D** **F below**	90 – 100 80 – 89 71 – 79 70 70	**~P** (pass) **~F** (fail)

Notes:
*****English Learners (ELs) must not receive numerical or letter grades for the core content areas in elementary and middle school during their first year of language development. A grade of CS or CU must be assigned. This rule may be extended beyond the first year with approval from the EL Studies Program. English Learners must receive a grade for ESOL courses.

DISTRICT EXPECTATIONS FOR SUCCESS	
STUDENT PROGRESS	Semester progress reports shall be issued four and a half, nine and thirteen and a half weeks into each semester. The progress of students shall be evaluated frequently, and plans shall be generated to remediate deficiencies as they are discovered. Plans shall include appropriate interventions designed to meet the needs of the students. **See Board Policy IH.**
ACADEMIC INTEGRITY	Students will not engage in an act of academic dishonesty including, but not limited to, cheating, providing false information, falsifying school records, forging signatures, or using an unauthorized computer user ID or password. **See the Code of Student Conduct - Student Rights and Responsibilities and Character Development Handbook.**
HOMEWORK	Homework assignments are meaningful and an application or adaptation of a classroom experience. Homework is at all times an extension of the teaching/learning experience. It is considered the possession of the student and will be collected, evaluated and returned to the students. **See Board Policy IHB.**
MAKE-UP WORK DUE TO ABSENCES	When a student is absent because of a legal reason as defined by Georgia law or when the absence is apparently beyond the control of the student, the student shall be given an opportunity to earn grade(s) for those days absent. Make-up work must be completed within the designated time allotted. **See Board Policy IHEA.**
Late Assignments:	Late assignments may be turned in up to 24 hrs. past due date for 70% of grade. Late assignments turned in more than 24 hours past due date will receive a maximum of 50%.
Re-do Policy:	Only the testing of projects can be re-done. If the project was turned in, but received lower than a 90%, can be redone for no more than 90% of the grade. Must be done within one week of original due date.
SCHOOL EXPECTATIONS FOR SUCCESS	
CLASSROOM EXPECTATIONS	1. Be on time and prepared for class every day. 2. Listen to instructions the first time 3. Turn in work on time. LATE class work will not be accepted without excuse pass. 4. DO NOT tamper with computer settings. 5. Clean computer area and log off prior to leaving class. 6. Clean Engineering Workshop as assigned prior to leaving lab 7. Follow all safety rules in the lab or classroom 8. Return tools and supplies to proper storage area. 9. Do not eat food or drink in the classroom or lab.
DETENTION	Detention will be given after two instances of tardy to class, horse playing in the classroom or failure to perform housekeeping responsibilities.
MATERIALS AND SUPPLIES	**Required:** Laptop with audio and video capabilities, Internet connectivity, 4 x 4 Grid Graphing Composition Notebook and 8 GB or larger flash drive.
EXTRA HELP	Extra assistance outside of the classroom will be provided on an as-needed basis. You must contact the instructor ahead of time to schedule tutorial.

PLEASE SIGN BELOW AND RETURN BY September 15, 2020

I have read the syllabus.

Student Signature_____

Parent/Guardian Signature_____ Date_____

Additional information to support continued contact:

Information	Parent/Guardian
Day Time Phone Number	
Cellular Phone Number	
Home Phone Number	
Email Address	