**Robotics and Automated Systems**

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| **Course Description:** The Robotics and Automated Systems course is the second course for the Engineering and Manufacturing Education pathways. This STEM driven course provides the students with an overview of engineering and technology including the different methods used in the engineering design process developing fundamental technology and engineering literacy. Students will demonstrate the skills and knowledge they have learned through various project based activities while using an engineering design process to successfully master the “E” in STEM. The pre-requisite for this course is advisor approval. |

**Standards:**The course standards in their entirety along with the connected standards for the core curriculum, (math, science, language arts, etc.), can be found on the Georgia Department of Education website. Only the Manufacturing specific standards’ reference numbers and title descriptions are listed on this syllabus. Please follow the link below to read the detailed descriptions of each course standard.

The details for Career & Technical Education Foundation Skills are also found on the state website. The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state’s academic performance standards.

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| **Georgia State Career Pathways Standards “Robotics and Automated Systems”** ENGR-RAS-1. Students will explain the history of automated systems and the benefits of those systems to manufacturing in a global society.  ENGR-RAS-2. Students will identify and explain the major engineering tasks in organizing automated manufacturing.  ENGR-RAS-3. Students will discuss the systems and applications of automation including: AGV, PLC, CNC, CIM, CAD, CAM, and robotics as essential to succeeding globally in a manufacturing market.  ENGR-RAS-4. Students will outline the utilization of programmable control devices and data transfer.  ENGR-RAS-5. Students will apply the principles of PLC, CIM, CAD, CAM, and robotics in the manufacturing of a product. | |  |
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**Learning Resources/Textbooks:**Due to the very broad nature of this course, several resources are necessary. Classroom sets will be available for reference as needed. Textbooks will not be issued to individual students. Main textbooks are listed below.

**Textbooks**:

**“Processes of Manufacturing, 4th Edition”** by R. Thomas Wright, Published by Goodheart-Wilcox Publishing.

In addition to the textbooks, numerous on-line and server based tutorials related to the various software programs will be utilized. The key software programs will include; Google SketchUp Pro & Blender for concept visualization, SolidWorks for 3-D Modeling, mechanical, & systems analysis, Bentley Systems for Civil Engineering Applications, and ArchiCAD for architectural applications.

**Availability for Extra Help:**

The instructor will be available for clarifications, additional questions, and individual assistance on Tuesdays, Thursdays & Fridays from 7:45am – 8:15am in room 182. All lesson materials, descriptions, & grading rubrics will be available to the students through **itslearning**. Students will also be able to post questions through itslearning.

Detailed instructions and hands-on practice for **itslearning** will be provided to students at the beginning of the school year. Access will be available over the internet from any computer. <https://forsyth.itslearning.com>

**Makeup Work:**

All missed work and assessments are the responsibility of the student when they are absent from school. A student who is absent on the class day before a regularly scheduled assessment will be responsible for completing the assessment on the regularly scheduled day and time. Students who have been absent more than two consecutive days (including the assessment day) will be given five (5) school days to make up the assessment and/or other assignments. This does not include major projects, research papers, etc., where the deadline has been posted in advance. The teacher has the discretion to grant a longer period of time to make up work if there are extenuating circumstances.

**Grading Calculations:**

Course Average = 50% (1ST Sem. Course Work)

+

50% (2ND Sem. Course Work)

+

1ST & 2ND Semester Course Work = 75% Summative + 25% Formative

**Grading Policy:**

A = 90 – 100

B = 80 – 89

C = 70 – 79

Failing = Below 70

*\*Formative Assessments include, but are not limited to homework, class work, practice tests, rough drafts, and sections of projects/ research papers/presentations.*

*\*Summative Assessments include, but are not limited to unit tests, final projects, final essays, final research papers, and final presentations.*

**Materials Requested**

Each student is requested to provide the following:

**A dozen #2 pencils**—engineers draw a great deal, and the drawing is done in pencil.

**$30 lab fee**—this will cover TSA membership, an SFHS Engineering shirt, and lab materials for all projects (robotics may require additional fees). Please send a check—no cash please--made to SFHS and put student name on check.

**Composition Notebook** – Engineers will use this as an engineering design notebook.

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**2014-2015**

**Course Syllabus**

Students, please sign the following and have your parent or guardian sign where indicated. Return the signed form & the $30 lab fee no later than the end of class on Thursday, August 14th.

\*”I have received a copy of the syllabus during the first week of enrollment in this class. I understand what the expectations and responsibilities are of the student.”

Parent or Guardian (print)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parent or Guardian Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_

Student Name (print)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Class Period\_ \_

Student Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student # \_\_\_\_\_\_\_ \_\_\_\_