



**NORTHVIEW HIGH SCHOOL
FOUNDATIONS OF ENGINEERING AND MANUFACTURING SYLLABUS**

**Mr. Paul Platt
Room 790**

Course Description:

Foundations is the introductory course for the Manufacturing Engineering Career Pathway. This course provides students with opportunities to become familiar with related careers and develop fundamental technological literacy as they learn about the history, systems, and processes of manufacturing and engineering. In addition, the course will provide an overview of the safe use of tools and equipment used in the industry. It provides students with opportunities to develop fundamental knowledge in the processes of Manufacturing, Robotics, and Automated systems. Upon completing this course, students will be able to apply their knowledge to our follow-up second course in Robotics and Automated Systems which uses of computer aided design (CAD), computer numerical control (CNC), robotics, computer assisted manufacturing (CAM), programmable logic controllers, automated guided vehicles (AGV), and computer integrated manufacturing (CIM). Competencies in the co-curricular student organization, **Technology Student Association (TSA)**, are integral components of both the skills standards and content standards for this course. <http://www.tsaweb.org>

Course Standards:

ENGR-FMMS-1. Students will explain the societal impact of manufacturing.

ENGR-FMMS-2. Students will describe the history of manufacturing.

ENGR-FMMS-3. Students will explain the universal systems model as it relates to manufacturing.

ENGR-FMMS-4. Students will explain and apply safe work practices while performing tasks.

ENGR-FMMS-5. Students will identify materials and resources used in manufacturing.

ENGR-FMMS-6. Students will describe the essential systems and processes involved in manufacturing. **ENGR-FMMS-7.** Students will perform a pre-planned introductory manufacturing activity applying correct safety procedures, appropriate use of materials, and processing operations.

ENGR-FMMS-8. Students will use visual and verbal communication to present employment and career opportunities in manufacturing

STEM Standards (Common to all Engineering & Technology Courses)

Nature of Technology

ENGR-STEM-1. Students will recognize the systems, components, and processes of a technological system.

Technology and Society

ENGR-STEM-2. Students will identify the impact of engineering and technology within global, economic, environmental, and societal contexts.

Design

ENGR-STEM-3. Students will design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication while considering economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints.



Abilities for a Technological World

ENGR-STEM-4. Students will apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems.

The Designed World

ENGR-STEM-5. Students will select and demonstrate techniques, skills, tools, and understanding related to energy and power, bio-related, communication, transportation, manufacturing, and construction technologies.

Reading

ENGR-STEM-6. Students will enhance reading by developing vocabulary and comprehension skills associated with text materials, problem descriptions, and laboratory activities associated with engineering and technology education.

Leadership Development

ENGR-STEM-7. Students will develop leadership and interpersonal problemsolving skills through participation in co-curricular activities associated with the Technology Student Association.

Methods of Instructional Learning: The instructor will utilize the following methods for meeting learning objectives for the units of the course:

- | | |
|---|-----------------------------------|
| 1. Class lecture/discussion/demonstration | 4. Student projects/reports/tests |
| 2. Question/answer | 5. Group work |
| 3. Guest speakers | 6. Audio-visual aids |

Grading:	Class Work	45%
	Projects	20%
	Tests	20%
	Final Exam	15%

- **Class Work** – Students will be asked to print out various assignments at random and turn them in for credit. Students will be expected to keep all class work in their notebooks for the duration of the semester.
- **Projects** – Several comprehensive projects will be required by each student. Handouts detailing these assignments will be given later in the course.
- **Tests** – Several tests will be given throughout the semester. Students will be expected to keep all tests in their notebooks for the duration of the semester.
- **Final Exam** – One comprehensive final exam will be given at the end of the semester.

Required Materials:

1. Three ring binder / Notebook paper
2. Calculator
3. Pen/pencil

Software: We will be using an internet based software program, AMATROL in this course.

Fees: A lab fee donation of \$30 is requested to help cover the cost of some of the materials for this course.

Internet Use: Because the Internet is a vital part of the curriculum, Internet use is available and used in all CTAE courses.

Make up Work/Late Work: Make-up work should be completed before school between 8:00 a.m. – 8:30 a.m. or after school by appointment, not during class. Following an absence, it is the student's responsibility to contact his/her teachers to arrange for make-up work. The contact must be made within one school day of returning. Students are given the same number of days to complete make-up work, as the absence, not including the day of



return. Students are allowed to make up work due to an unexcused absence and will receive partial credit of the actual grade. Any project that is made up or turned in late will receive a 20% reduction for each day after the assigned due date with a deadline of five days late. Long-term projects (two or more weeks from the assigned date to the due date) are due on the assigned due date. Any long term-project that is made up or turned in late will receive a 20% reduction for each day after the assigned due date with a deadline of five days late

Extra Help: Extra help is available before school each day at 8:00 a.m. and after school by appointment.

Headphones/iPods/musical or game devices cannot be used in Career Tech classes unless it is part of the course curriculum.

Classroom Expectations: Students are expected to follow the classroom expectations that are stated in the Northview High School Student Handbook. Students are expected to:

- Speak/think positively
- Follow Directions
- Obey classroom rules & procedures
- Assume good will
- Be a team player
- Have tolerance, respect, and concern for others
- Be prepared for class
- Use time wisely
- Strive for success

Related Careers: Mechanical Engineering, Industrial Engineering, Automated Systems Specialist, Programmer, Aerospace Engineering, Industrial Engineering, Electrical Engineering, Material Science Engineering, Environmental Engineering, Civil Engineering, Entrepreneur and many more...

Advanced Placement with Post-Secondary Institutes: An articulation agreement is currently in place with Fulton County Schools Career Technology Department and Gwinnett Technical College.

Parent/Teacher Communication: Communication with parents about academic progress, behavior and/or attendance is welcomed and will be handled by phone, mail, conference, or a combination of these as the need arises. Home Access Center (HAC) is available for the use of all parents in monitoring a student's academic progress, attendance, or behavior.



Detach and return to the teacher with a \$30 materials donation

Foundations of Engineering

A \$30 lab fee donation is requested to cover some of the cost for materials in this course.

Student Signature

Print Name

Period

Date

Email Address