



NORTHVIEW HIGH SCHOOL
ENGINEERING CONCEPTS SYLLABUS
Engineering Career Cluster Pathway
Course Number 21.47100

Mr. Paul Platt
Room 790

Prerequisite: Foundations of Engineering; Engineering Concepts

Course Description:

Engineering Concepts is the second course in the Engineering and Technology Pathway. Students will learn to design technical solutions to engineering problems using a whole systems approach to engineering design. Students will demonstrate the application of mathematical tools, teamwork, and communications skills in solving various design challenges, while maintaining a safe work environment. The prerequisite for this course is Foundations of Engineering and Technology.

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:

STEM-EC-1 Demonstrate employability skills required by business and industry.

STEM-EC-2 Demonstrate and follow safety, health, and environmental standards related to the Science, Technology, Engineering, and Math (STEM) workplaces.

STEM-EC-3 Describe the characteristics of engineering disciplines and engineered products.

STEM-EC-4 Demonstrate the knowledge and skills required to pursue the full range of engineering post-secondary education and career opportunities.

STEM-EC-5 Explain a whole systems approach to the engineering design process to solve a technical problem.

STEM-EC-6 Employ critical thinking skills and teamwork skills when working in groups to solve problems, to make decisions, achieve group goals and use team members' talents effectively.

STEM-EC-7 Summarize and apply engineering solutions through the audience appropriate application of engineering graphics and technical writing.

STEM-EC-8 Apply basic engineering tools and resources to aid in data collection and problem solution sets.

STEM-EC-9 Cite evidence for the role of troubleshooting, research and development, inventions, and innovations in problem solving.

STEM-EC-10 Explore the use of social media and other 21st century technologies and their impact(s) on the fields of engineering and technology.

STEM-EC-11 Critique and synthesize 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).

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

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

Grading:	Classwork	45%
	Tests/Quizzes	20%
	Projects	20%
	Final Exam	<u>15%</u>

- **Classwork**-Students will be asked to print out assignments at random and turn them in for credit. Students will be expected to keep all daily work in their notebooks for the duration of the semester.
- **Quizzes** – Quizzes will be given throughout the semester to ensure comprehension of material. Students will be expected to keep all quizzes 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. Folder/Notebook paper
2. Calculator
3. Pen/pencil

Textbook Materials: The basic textbooks used in this course will be:

📖 Engineering Your Future 2nd Edition - Gomez, Oaks, Leone \$68.50

*** Note: Students will be issued these textbooks. Any student who damages a textbook will be responsible for any and all charges associated with such damage.

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 for Engineering, Internet use is available and used in all courses.

Make up Work/Late Work: Make-up work should be completed before school between 8:00 a.m. – 8:20 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 in Room 792 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 Rules: 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

Engineering Related Careers:

Mechanical Engineering
Architect
Electrical Engineering
Chemical Engineering
Entrepreneur
... and many more

Aerospace Engineering
Industrial Engineering
Materials Science
Environmental Engineering
Civil Engineering



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. Please call the main office (470-254-3828) for more information.

It is my sincere hope that my students learn life long lessons in this engineering class. I also encourage you to communicate with your student as we study the curriculum Georgia Performance Standards about engineering.



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

Engineering Concepts

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