

**Jefferson County High School  
Course Syllabus**

**Course – Foundations of Technology**

**Department – Career & Technical Education**

**Course Description** - This course integrates STEM in problem-solving, project-based learning, and engineering design helping all students develop a better understanding of information and communication, construction, manufacturing, and power and energy technologies.

**A. Grade Term – Fall Semester 2016**

**B. Grading Scale**

<u>Range</u>	<u>Honors/ Regular</u>	<u>College-Level</u>	<u>A.P.</u>
93-100 A	4.0	4.5	5.0
85-92 B	3.0	3.5	4.0
75-84 C	2.0	2.5	3.0
70-74 D	1.0	1.5	2.0

**C. Term Dates**

- a. 1<sup>st</sup> 9 Weeks August 5, 2016 – October 7, 2016
- b. 2<sup>nd</sup> 9 Weeks October 8, 2016 – December 16, 2016
- c. 3<sup>rd</sup> 9 Weeks January 5, 2017 – March 15, 2017
- d. 4<sup>th</sup> 9 Weeks March 16, 2017 – May 25, 2017

**D. Textbook – N/A**

**E. Other Required Reading**

- a. As directed – Mostly online technology and engineering websites

**F. Other Resources**

- a. Odysseyware

**G. Major Assignments**

**H. Procedures for Parental Access to Instructional Materials**

- a. Aspen Parent Portal
- b. Instructor's Website
- c. Instructor can be emailed at the following address: [jwilliams@jcboe.net](mailto:jwilliams@jcboe.net)
- d. Parent Teacher Conference

- a. There are two designated conference dates during the school year. Parents who would like to request additional meetings may make appointments for conferences with the teachers (during their planning periods), counselors, or a principal by telephoning the school office.

### **I. Field Trips**

- a. Any schedule fieldtrip will have a definite educational purpose and will reflect careful planning. Signed permission forms will be obtained when an off campus trip is planned.
- b. If student is involved in the Technology student association, there is a possibility of multiple day field trip in the spring for participation in the TSA State Conference in Nashville.

### **J. Standards & Objectives**

#### **Foundations of Technology – EBD Course #5917 Standards and Competencies for 2016-17**

**Standard 1** - The student will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community and workplace through Technology Student Association.

- 1.1 - I can exhibit positive leadership skills.
- 1.2 - I can participate in the Technology Student Association (TSA) as an integral part of classroom instruction.
- 1.3 - I can demonstrate the ability to work cooperatively with others in a professional setting.
- 1.4 - I can outline leadership skills and team building.
- 1.5 - I can identify personal, teamwork and leadership skills used in various occupations.

**Standard 2** - Safely use tools, materials, equipment and other technology resources.

- 2.1 - I can successfully pass a test on general classroom, lab, and/or shop safety guidelines with 100 percent accuracy.
- 2.2 - I can successfully pass a test on the safe use of tools and equipment used in the lab and/or shop with 100 percent accuracy.
- 2.3 - I can successfully pass a test on the safety hazards that exist at home, school and in the workplace.
- 2.4 - I can use research relating to OSHA regulations conduct a safety inspection for a lab, school, or business.
- 2.5 - I can list and explain the importance of safety guidelines for TSA competitive events.

2.6 - I can understand general laboratory safety rules and regulations when using tools, equipment and performing processes.

2.7 - I can understand safety, nomenclature and usage of all hand tools used in this course.

2.8 - I can understand and explain potential safety, chemical, electrical and fire safety hazards that exist in a Technology Engineering classroom and their school.

2.9 - I can list all safety rules required when competing in specific TSA competitive events.

**Standard 3** - Develop a knowledge and understanding of the influences of technology on history.

3.1 - I can identify the periods of human history associated with the evolution of technology and explore how people of all times and all places have increased their capability by innovating, improvising, and inventing.

3.2 - I can identify the way technology has influenced history by comparing and contrasting life in different periods of technological development.

3.3 - I can analyze the historical significance of technological advancement and gain an understanding of the influence of technology on history.

3.4 - I can research the history and current practice, policies and procedures of an engineering career field.

3.5 - I can identify an emerging technology and report on its potential influence on history.

3.6 - I can examine, categorize, and interpret the influence technology has had on history.

3.7 - I can develop abilities to assess the impacts of products and systems.

**Standard 4** - Develop an understanding of the relationships among technologies and the connections with other fields of study.

4.1 - I can understand and explain that interrelationships exist among technologies and between technologies and other fields of study.

4.2 - I can define the way technological progress promotes the advancement of science and mathematics, the different traditions

in science about what is investigated and how and the resulting impacts on society.

**Standard 5** - Apply the Engineering Design Process.

5.1 - I can identify resources, steps in the design process, and the constraints within the engineering design process.

5.2 - I can understand and apply the engineering design process by transforming an idea into a final product or system.

5.3 - I can identify and describe the core technologies (mechanical, structural, electrical, electronic, thermal, fluid, optical, bio, and material) as they are applied in the design world.

5.4 - I can analyze how mechanical systems in terms of common components, basic system design, safety considerations and simple controls.

5.5 - I can analyze how electrical systems in terms of common components, basic system design, safety considerations and simple controls.

5.6 - I can apply the concepts of reverse engineering with the intention to construct a new device or program that does the same thing without actually copying from the original.

5.7 - I can examine and analyze open and closed fluid systems in terms of common components and basic system design.

5.8 - I can explain the function and application of thermal technology systems.

5.9 - I can analyze how optical systems function in terms of common components, basic system design, safety considerations, and simple controls.

5.10 - I can understand the connection between materials science and engineering materials.

**Standard 6** - Develop an understanding of and be able to select and use Manufacturing Technologies.

6.1 - I can understand the function and organization of manufacturing enterprises.

6.2 - I can describe how Computer-Integrated-Manufacturing (CIM) is changing the manufacturing technologies.

6.3 - I can identify the major mechanical, thermal, chemical and electrochemical processes used in producing industrial materials.

6.4 - I can understand that manufacturing is a production system that uses technological resources to transform ideas into products.

6.5 - I can research what is new in manufacturing.

6.6 - I can understand how products are manufactured.

**Standard 7** - Develop an understanding of and be able to select and use Construction Technologies.

7.1 - I can understand construction technology and how cultural norms, environmental conditions, and the requirements of enterprises might affect the design of structures.

7.2 - I can understand bridge design and construction, including the forces acting on structures.

7.3 - I can describe the functions, applications and the requirements of construction management.

**Standard 8** - Develop an understanding of and be able to select and use Energy and Power Technologies.

8.1 - I can understand and describe the nature of energy and power technologies.

8.2 - I can explain the production, conversion, transmission and application of different forms of energy.

8.3 - I can effectively explain how energy cannot be created nor destroyed.

8.4 - I can systematically analyze and diagram power systems.

8.5 - I can explain how energy production and consumption can impact society, productivity, and the environment.

**Standard 9** - Develop an understanding of and be able to select and use information and communications technologies.

9.1 - I can understand the nature of information and communication technologies.

9.2 - I can investigate the major types of communication systems.

9.3 - I can identify the functioning and applications of communication systems.

**Standard 10** - Develop a knowledge and understanding of Systems Thinking.

10.1 - I can explain how systems thinking are used to apply logic and creativity in complex real-life problems.

10.2 - I can apply the core concepts of systems thinking.

10.3 - I can analyze the relationship between technological processes and natural processes.

10.4 - I can investigate technologies designed to reduce the negative consequences of other technologies.

10.5 - I can research and report on processes that conserve water, soil, and energy.

55 Competencies

