

MECHANICAL MOVEMENT
Department of Engineering & Technology Studies
High Point Regional High School
2005-2006

Course #: 781.01

Credits: 5

Length of Course: Full Year

Grade Level: 9

Weight: 1.12

Prerequisites: None

Course Description:

This course has been designed as a freshman level introduction to High Point's engineering and technological studies program. The majority of the course content will pertain to mechanisms and motion, computer drafting and solid modeling, physical prototyping, and basic material manufacturing processes. In learning about these four areas in technology, students will be introduced to larger technological concepts such as engineering design, technological systems, and creative problem solving. Students will use and become familiar with the design-problem solving loop and be asked to solve complex design problems on a regular basis. Students will be encouraged to exercise creativity in solving design problems while at the same time learn to design solutions around set guidelines and criteria for each problem.

High Point Regional High School's curriculum and instruction are aligned to the State's Core Curriculum Content Standards and address the elimination of discrimination by narrowing the achievement gap, by providing equity in educational programs and by providing opportunities for students to interact positively with others regardless of race, creed, color, national origin, ancestry, age, marital status, affection or sexual orientation, gender, religion, disability or socioeconomic status.

New Jersey Curriculum Content Standards and Cumulative Progress Indicators:

STANDARD 8.1 (Computer and Information Literacy) All students will use computer applications to gather and organize information and to solve problems.

A. Basic Computer Skills and Tools

5. Produce a multimedia project using text, graphics, moving images, and sound.
8. Discuss and/or demonstrate the capability of emerging technologies and software in the creation of documents or files.

B. Application of Productivity Tools

1. Describe the potential and implications of contemporary and emerging computer applications for personal, social, lifelong learning, and workplace needs.
2. Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse.
3. Make informed choices among technology systems, resources, and services in a variety of contexts.
4. Use appropriate language when communicating with diverse audiences using computer and information literacy.
7. Evaluate information sources for accuracy, relevance, and appropriateness.
9. Create and manipulate information, independently and/or collaboratively, to solve problems and design and develop products.
10. Identify, diagnose, and suggest solutions for non-functioning technology systems.

11. Identify a problem in a content area and formulate a strategy to solve the problem using brainstorming, flowcharting, and appropriate resources.
12. Integrate new information into an existing knowledge base and communicate the results in a project or presentation.

STANDARD 8.2 (Technology Education) All students will develop an understanding of the nature and impact of technology, engineering, technical design, and the designed world as they relate to the individual, society, and the environment.

A. Nature and Impact of Technology

3. Provide various examples of how technological developments have shaped human history.

B. Design Process and Impact Assessment

3. Develop methods for creating possible solutions, modeling and testing solutions, and modifying proposed design in the solution of a technological problem using hands-on activities.
4. Use a computer assisted design (CAD) system in the development of an appropriate design solution.
5. Diagnose a malfunctioning product and system using appropriate critical thinking methods.
6. Create a technological product, system, or environment using given design specifications and constraints by applying design and engineering principles.

Course Proficiencies

Students will be able to:

Define terms and discuss concepts relevant to mechanisms and motion, computer modeling, graphic communication, and manufacturing processes.

Express design ideas with clarity and precision to others through use of the graphic language (sketching, computer drafting).

Use computer software to produce 3D models for visualization of design ideas.

Design and build complex mechanical devices (model mechanisms, automata).

Safely use manufacturing processes to build from plans.

Student Evaluation:

The following are the items included in the evaluation of student achievement with approximate percentage used to calculate the student grade.

Classwork/Homework	10%
Quizzes	10%
Tests	15%
Projects	35%
Class Participation	30%

Class participation plays a critical role in the student's success in this course. Each student will receive a weekly class participation grade based on classroom conduct, citizenship, observation of safety rules and regulations, preparation for each day's class, teamwork, and effort.

Midterm and Final Exams last modified 2008

Materials, Resources, & Text:

Autodesk Inventor 8: AIA Tutorials, teacher prepared instructional aids, various internet resources, tool & equipment manufactures operational manuals.

District Policy:

Refer to student handbook.

Course Policy:

Students must follow safety guidelines as identified by the Department of Engineering & Technological Studies Safety Program.