STEM

COURSE SYLLABUS

“Learning gives creativity, creativity leads to thinking, thinking produces knowledge, knowledge makes you great.”

STEM Course Syllabus

Coach Keith Gray kgray@jpsms.org **8:00-8:40 (M-F)**

Welcome Statement

On behalf of the STEM elective team, I would like to welcome you to the Freshman Academy at Provine High School. As a Freshman Academy teacher at Provine High School, my goal is to create a safe learning environment that will allow the Freshman Academy students the opportunity to thrive as they transition into high school. For our freshman students to thrive, we must have a unified approach to learning to ensure that our freshman students are given the opportunity to reach their highest potential. For our freshman students to reach their maximum potential as scholarly learners, the following things must occur:

1) Our freshman students must attend school daily and on time with a mind-set that is strictly focused on learning.

2) Our freshman students must have supplies daily for each class block.

3) Our freshman parents and/or guardians must have constant communication with teachers about the progress and the behavior of their scholar.

4) Our freshman students must follow all the rules, policies, and procedures that are established by the Jackson Public School District, by Provine High School, and by each teacher.

Transitioning from middle school to high school can be very difficult for some students. As a Freshman Academy teacher, I am committed to making this transition less difficult for our freshman students.

Thank you for allowing Provine High School, especially the Freshman Academy, the opportunity to develop and nurture your scholar. Together, we, as a team, can make the 2021-2022 school year the best academic school year for our Freshman Academy scholars.

Course Rationale

STEM integrates science, technology, engineering, and mathematics to solve problems, often requiring high-tech skills. While STEM professional industries account for around 6 percent of U.S. employment (Noonan, 2017), 20 percent of all jobs require a high level of knowledge in any one STEM field (Rothwell, 2013). This means that one in five workers entering non-STEM fields will still require a high level of knowledge in at least one STEM-related area (e.g., engineering, electronics, functional mathematics, computer programming). If the past ten years is any indicator, requirements for workers to have some level of STEM proficiency will continue to grow. STEM jobs encompass a wide variety of occupations from biomedical technology to mechanical engineering to computer system administration to statistics to paleontology. A U.S. Department of Commerce study found

that employment in STEM occupations over the last decade grew at 24.4 percent versus 4.0 percent for non-STEM occupations, but this growth is showing some signs of slowing. From 2014-2024, STEM careers are expected to grow by 8.9 percent versus 6.4 percent for non-STEM fields. Careers in computer science will see a marked growth with a 12.5 percent increase from 2014-2024, which should account for half a million new jobs. The second largest increase in jobs will be seen in the engineering sector with 65,000 new jobs from 2014-2024. Not all STEM or STEM-related fields should be considered a sure-thing however as some fields, such as drafters and mapping technicians, are projected to decline.

Course Description

Science, Technology, Engineering, and Mathematics (STEM) Applications is an innovative instructional program that prepares students to engage in future academic and career and technical courses of study in high school, community college, and institutions of higher learning. The purpose of the program is to provide pupils with expanded knowledge of the use of critical thinking, analysis, problem solving, and technological skills and to enable them to apply knowledge in a technological context. Hands-on experiences related to the application of engineering concepts in the workplace are central to all portions of this course. Students will develop academic, 21st-century and human relations skills and competencies that accompany technical skills for job success to help foster lifelong learning. Students who complete the program will be better prepared to enter and succeed in the STEM workforce, or programs offered by Mississippi community and junior colleges and institutions of higher education.

Learning Expectations

Coach Keith Gray's students are expected to achieve understanding of the following I Can Statements this year:

(1) I Can Statement-I can identify different careers and occupations in the STEM career cluster.
(2) I Can Statement-I can differentiate between the scientific method versus the engineering design process.
(3) I Can Statement- I can use different computer programs and computer applications to analyze and solve complex problems.
(4) I Can Statement-I can analyze and solve different components of Newton's Laws of Physics.
(5) I Can Statement-I can use multiple online learning communication systems to complete complex tasks.
(6) I Can Statement- I can use critical thinking skills to solve complex problem

Program Goals

(1) Ignite the student's passion for learning.
(2) Create an environment where students can learn freely and openly.
(3) Grow students as independent and critical thinkers.
(4) Build the student's foundational knowledge in areas related to Science, Technology, Engineering, and Mathematics.
(5) Grow student's knowledge about the different careers and occupations that are associated with the Science, Technology, Engineering, and Mathematics career cluster.
(6) Prepare and motivate students to want to purse future opportunities in STEM related courses in high school and beyond.
(7) Build the students' proficiency in using different computer programs and computer applications.

Daily Assignments

(1) Bell-Ringers-Each class period will start with a bell-ringer activity that will count as a daily grade. Bell-ringer activities will vary.
(2) Classwork
    a. SLR Activities (Short Lesson Review)
    b. Topic responses
    c. Career exploration activities
    d. STEM related article analysis
    e. STEM foundational mathematics activities (These activities will incorporate different types of career related mathematics)
    f. Computer Skills Builder activity (Students will use different computer programs/applications to increase their levels of proficiency)

Assessment Plan

Unit assessments will consist of projects/tests on the material covered in each unit. Tests/projects will contain different types of test questions ranging from multiple choice to fill-in-the-blank to short answer response to essay questions and applications.

Course Materials

- Computer (everyday)
- Folder
- Writing Utensil
- Headphone (will be instructed when to bring them)

Grading Scale

A= 90-100

B= 80-89

C= 70-79

D=60-69

F=59-below

***Students that make below a grade of 60 will have the opportunity earn points to increase their score on tests only. THIS DOES NOT APPLY TO DAILY GRADES.

Course Expectations

In the STEM course, students are expected to do the following:

(1) Follow all rules, policies, and procedures outlined by the Jackson Public School District and Provine High School.
(2) Abide by all rules, policies, and procedures established by the teacher.