**COURSE OUTCOME:**

* **Course Description**

This course deeply submerged in modeling, abstraction, and precision. The entire course is founded on Problem Based Learning (PBL). Students are given a scenario and must analyze the problem; calculate measurements and establish various thresholds; design, construct, and program a robot to complete the given task; collect and analyze data; modify and adjust program, robot, and calculations based on the collected data; and repeat the process until objectives have been completed. The mathematical range of this course extends to precalculus due to the importance of calculating precise angles and tangents.

**INSTRUCTION:**

* **Topics/Skills Covered** 
  + Math Standards
    - Make sense of problems and persevere in solving them
    - Reason abstractly and quantitatively
    - Model with mathematics
    - Attend to precision
    - Look for and make use of structure
    - Look to and express regularity in repeated reasoning
  + TN Core Mathematics Content
    - Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities
    - Understand the concept of a unit rate a/b associated with a ratio a:b and with b!=0, and use rate language in the context of a ratio relationship
    - Use ratio and rate reasoning to solve real-world and mathematical problems
    - Use proportional relationships to solve multi-step ratio and percent problems
    - Use of geometry and trigonometric concepts including tangent and trigonometric ratios
  + TN Core English Language Arts
    - Write arguments focused on discipline-specific content
    - Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
  + Next Generation Science Standards
    - Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem
    - Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved
    - Design a solution to a complex real world problem by breaking it down to smaller, more manageable problems that can be solved through engineering
    - Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts
  + Computer Science Principles Framework (CSP)
    - Use computing tools and techniques to create artifacts
    - Collaborate in the creation of computational artifacts
    - Analyze computational artifacts
    - Use programming as a creative tool
    - Develop an abstraction
    - Use models and simulations to raise and answer questions
    - Develop an algorithm designed to be implemented to run on a computer
    - Express an algorithm in a language
    - Explain how programs implement algorithms
    - Evaluate a program for correctness
    - Develop a correct program
    - Collaborate to solve a problem using programming
    - Employ appropriate mathematical and logical concepts in programming
    - Connect computing within economic, social, and cultural contexts

**Resources:**

* **Materials Needed**

\*TI-84+ Graphing Calculator (recommended)

\* Binder or notebook for notes

\* Loose-leaf notebook paper for quizzes, in class work, etc.

\* Pencils

\* Colored Pencils or pens for interactive student notebook  
\* Ruler (for projects and work at home)

* **Fees**

**All math courses have a $10.00 fee**

The math fee is for the purpose of providing math related materials for classroom use.

If writing a check, please make the check payable to **Gibbs High School.**

* **Resources**
* Textbook
  + Instructional material will be provided.
* Compliance with Instructional Materials Policy & Procedure I-211
  + Materials used in class meet this policy.
* Compliance with Use of Audiovisual Works Policy and Procedure I-230- 2
  + Concept demonstration media were provided by the textbook company
* Technology
  + Calculator, Google Drive (Each student has a separate account), Canvas, Parent Portal
* **Safety Procedures**
* Follow KCS School board policies for a regular education classroom. A red Emergency folder is available in the classroom to provide information about procedures
* **Statement about religious content**
* The content of this course is mathematics and how to use mathematics concepts to solve problems. There is no direct religious content.

**ASSESSMENT:**

* **Expectations**

Students will be expected to master all materials listed in the Tennessee State Standards. Mastery will be determined by tests and quizzes, as well as the County End of Course Exam (EOC - worth 25% of total grade).

* **Grading Policy**

Grades will be determined by accumulation of points.

Grade Scale:

A 93-100

B 95-92

C 75-84

D 70-74

F below 70

* + Chapter Tests and quizzes – 50% of total grade
  + Homework, Class Assignments, and Projects – 40% of total grade
  + Final Exam – cumulative exam which will count 10% of final grade
* **Explanation of Assignments & Projects**

Students will be expected to complete all assignments and projects assigned throughout the semester.

* **Make-Up Work Policy/Late Work Policy**

Reference the policy described in the student handbook.

Essentials: Students must request make-up work from teachers within three days of returning to school.

Students must complete work within a reasonable amount of time.

Students who miss one day will be expected to be prepared to participate in all previously assigned classroom activities, including tests and quizzes, on the day they return.

Missed exams and quizzes must be completed at the Pilot Center during its hours of operation.

Missed exams and quizzes must be completed within 5 school days from the day the student returns to school. If a student does not complete an exam or quiz within the expected timeframe, then the student will earn a 0 for that grade. This policy is flexible depending on the circumstances.

* **Portal Post Policy**

Students will receive daily feedback about their performance through assessments in class. Work will be graded as assignments are completed and recorded in the gradebook within a timely manner.

**GENERAL EXPECTATIONS:**

* **Students:**
* **Attendance Policy**

Reference the policy described in the student handbook.

* **Classroom Policy/Procedures**
* **Classroom Rules:**
  + - Be on time
    - Be prepared
    - Be respectful
    - Pay attention
    - No food or drinks
    - Cell Phone Policy: See it. Hear it. Take it.
* **Notebook:**

Each student is required to keep a notebook. The notebook must be brought to class daily. A binder with loose-leaf paper and dividers is recommended.

***Textbooks are not to be used as your notebook!!!***

* **Notes & Homework:**
  + Students are required to take notes daily during instruction. These notes will serve as a study guide for the lesson.
  + Homework assignments must be completed and are subject to be collected at any time. Homework grades are based on the student’s ability to complete problems similar to those provided in class notes**.**
  + Students are expected to persevere and complete their homework using all available resources: notes, textbook, tutoring, student study groups, online resources, etc. Each challenge is a learning opportunity that students must take advantage of.
  + Tutoring is available for free, at school, and students are expected to attend tutoring whenever they begin to struggle with a concept. Students should attend tutoring before the assignment is due.
* **Honor Code**

Students are expected to do their own work. This includes class work, projects, tests, quizzes, etc. Reference the policy described in the student handbook.

**TEACHER:**

* **Communication Strategy:**
* Students are encouraged to communicate any problems they may be having with class content, projects, etc. to the teacher. Students are encouraged to check their grades on the portal frequently to maintain an understanding of what their grade is.
* Parents are encouraged to email or call the instructor with any questions or concerns at any time.
* I am open to feedback. Please contact me if you have any questions or concerns or if you notice any struggles that your child may be encountering.
* Best way to reach me is by email.

**Email Address:** [**adam.howard@knoxschools.org**](mailto:adam.howard@knoxschools.org)

**Phone Number: (865) 689-9130 x 72547**

* **Intervention Strategy:**
  + Tutoring will be available through the Pilot Center. When the center opens hours will be announced and posted in the classroom.
  + Additional tutoring opportunities are available from other math department instructors.
  + You may also email me questions about homework.