Ms. April Moon
Robotics 1 (2023-24)

Teacher: Ms. April Moon **Email:** april.moon@redoakisd.org

4 TALONS OF THE HAWK

ACADEMICALLY PREPARED	OPEN TO CHALLENGES OF LEARNING	FAIR, RESPECTFUL, & WELL ROUNDED	LEAVE A LEGACY
• 1% better every day • Love & Accountability	• GRIT- Growth, Resilience, Integrity, Tenacity	• REACH- Respect, Encourage, Appreciate, Communicate, Honor	• We Before Me (Service)

Ms. Moon's Schedule

1st Period 8:20 - 9:07	2nd Period 9:12 - 9:59	3rd Period 9:12 - 9:59	4th Period 10:56 - 11:43	5th Period 11:48 - 1:26 *includes lunch and Talon Time	6th Period 1:32 - 2:19	7th Period 2:25 - 3:12	8th Period 3:18 - 4:05
PLTW District Coordinator	**Engineering Design and Development* And Robotics 2**	**Engineering Science****	**Engineering Design and Development***	**Teacher Conference Period**	**Aerospace Engineering**	**Robotics 1**	**Robotics 1**

*Engineering Design and Development (EDD) is also known as the "Senior Capstone Engineering Course"
**Engineering Science is also known as "PLTW's Principles of Engineering (POE) Course"

Tutoring Hours: 4:10-4:30

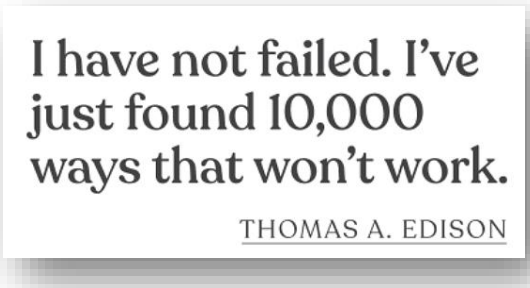
Suggested Supplies (stays with students)

- Pencils and a White Magic Rub Eraser
- Map Pencils ("Twistables" preferred)
- Glue Stick

* Some portfolio and project supplies (i.e. - presentation boards) may be required throughout the year.
* Ms. Moon will provide engineering journals for each student, which will primarily stay in the classroom.

Class Culture

The culture / environment in my classroom is student centered – where I facilitate lessons, but you individually drive your learning through exploration, creative and critical thinking, collaboration, and carrying out the steps of the engineering design process.



Not only will we learn STEM concepts, but I hope you develop a stronger love for learning. We will also focus on developing 'life' skills, including skills related to teamwork, professional communication, project management, and problem solving.

My classes are rigorous, and my expectations are high, but the rewards are great!

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Robotics I Course Description

In Robotics I, students will transfer academic skills to component designs in a project-based environment through implementation of the engineering design process. Students will build prototypes and/or use simulation software to test their designs. Additionally, students will explore career opportunities, employer expectations, and educational needs in the robotic and automation industry

As outlined by the Texas Education Agency, students are encouraged to participate in extended learning experiences, such as career and technical student organizations and other extracurricular activities.

Robotics I Course Topics

- Robotics Exploration
- Automation
- Safety Guidelines and Governmental Regulations for Health and Safety in the Workplace
- Proper Maintenance, Handling, and Storage of Tools, Equipment, and Materials
- Teamwork and Conflict Resolution
- Effective Problem-Solving
- Project Management, Time Management, and Project Schedules
- Robotic Careers, Industry-Based Certifications, Preparation Programs, and Employability Skills
- Engineering Principles and Fundamental Physics
    - ❖ Newton's Laws as applied to robotics such as rotational dynamics, torque, weight, friction, and traction factors required for the operation of robotic systems
    - ❖ Mechanical Advantage and Gear Ratios (Simple/Compound Machines and Gear Trains)
    - ❖ Statics
- Logic, Program Flowcharts, and Pseudocode
- Effective, Efficient, and Proper Coding (Feedback Control Loops, Sub-Programs, Variables, Conditional Statements, Inputs/Outputs, Best Practices for Commenting and Documentation, etc.) *Block and Text Coding*
- Robotic Components (Motors, Manipulators (Mechanical linkages, such as robotics arms, driven by actuators), End Effectors, Feedback Devices, Controllers, Wiring, etc.)
- Robotic Design (Engineering Design Process, Constraints, and Criteria)
    - ❖ Use Engineering Journal to Document Design Process
    - ❖ Design and Construct VEX V5 robotics or automated systems to perform specified operations using the engineering design process
    - ❖ Test and Refine the designs of a robotic or automated system to ensure quality, efficiency, and manufacturability of the final product
    - ❖ Present final products using a variety of media

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- Industry Standard Schematics
- Precision Measurement
- Ethical Issues Related to Robotics
- Nanotechnology ☺

Classroom Rules

1. Safety is our first priority! Therefore, all lab rules must be strictly followed. Students must be signed off to use tools and equipment, and an engineering instructor must be present when tools are used!
2. Respect Others and Respect Property:
   - Treat others with respect as outlined in your class's Social Contract.
   - Please dispose of trash whether it is yours or not.
   - Please ensure all supplies / tools are put up in their designated 'home' neatly.
   - Please do not disturb items around or in my desk, and my teacher laptop is strictly off limits.
3. Eye contact is important, both with me and your classmates. Therefore, for the duration of class, all hair must be kept away from your eyes.
4. Computers will be used for academic purposes during designated times only. Proper electronic etiquette will be followed when others are speaking and no online games are ever allowed in my lab (except the ones I am using for instructional purposes)!
5. Please dispose of food packages in the trash can OUTSIDE my room. Eating in my room is a privilege, not a right. Always leave spaces better than you found them!

"Freedom and responsibility go hand in hand!"

Classroom Procedures

1. Everyone must participate. This is the only way our class will reach its full potential as a team.
2. Respect others even when it requires *intentional* effort. We will work as a team in my class.
3. Units must be shown, and the process steps used to arrive at all solutions must be neatly recorded.
4. Your journal should be your first resource for questions. Your second resource is your team.
5. All students will honor their commitment to the class's Social Contract (norms generated by students in each of my classes during the second week of school).

Course Structure and Assessments

It is important that you take thorough hand-written notes in their engineering journals since your notes will be their main source of information (not a textbook), and it is vital that you come to class prepared - with all required supplies and a focus on learning. Periodically, I will conduct unannounced evaluations of your engineering journals.

We will explore engineering through exciting activities and projects that will allow a deeper understanding of the concepts being learned. For major projects, a detailed design brief, grading rubric, and the project's due date will be supplied upfront so that expectations are clear. All projects will incorporate criteria related to creativity, proper documentation, accurate computations / content connections, evidence of the student's journey through the engineering design process (proof of concept), effective teamwork, proper project management, a final presentation, and metacognition. Projects will be assessed using a rubric and will carry the weight of at least one test grade. Peer evaluations and progress checks may also factor in to a student's project grades.

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Traditional quizzes/tests, live performance evaluations, and metacognition activities will also factor into the students' grade.

Note: Units must be shown ALWAYS, and the process steps used to arrive at solutions must be neatly recorded. Oftentimes, the process steps are graded at a heavier weight than the final answers.

Grading Policy

Mandated by District: Daily Grades 40% and Major Grades 60% [Tests and Major Projects]

Canvas: Some assignments will be given on Canvas, but the gradebook/Skyward is the source of final grades.

Late Work: If a student fails to meet the due date/time, then the student has until the next class period to turn in their assignment. Students will be assessed a max penalty of 30 points for every school day that an assignment is late.

Retests: A retest grade will max out at 70. (Retesting will not include semester or final exams.) The retest must be taken within five school days of the original test grade being provided to the student unless there are extenuating circumstances approved by the classroom teacher and/or campus administrator.

Academic Dishonesty: Academic dishonesty includes cheating or copying the work of another student, unapproved use of technology including cell phones, plagiarism, and unauthorized communication between students during an examination. Consequences for academic dishonesty:
Grade of zero, Referral, Student reflection assignment, and Teacher contacts parents. *Upon the teacher's discretion, an alternative exam/assessment (for a max grade of a 70) may be assigned.

Absences

If possible, work missed due to absences should be picked up and attempted before returning to class so the student better connects with the new lessons.

Any project work that spans two weeks or longer should be turned in the day it is due. If a student is absent on that day, they must turn it in early, email it to me by their scheduled presentation time, or find a way to transport their project to school by their scheduled presentation time. This is especially important if the project is a team-based assignment.

Students that are absent for school related or pre-scheduled activities/events on the day an assignment is due are required to turn in the assignment prior to the absence for the event.

*** This syllabus may change at the teacher's discretion. ***