Ms. April Moon
Engineering Design and Development 2024-2025
aka Capstone Engineering

Email: april.moon@redoakisd.org

4 TALONS OF THE HAWK

ACADEMICALLY PREPARED
- 1% better every day
- Love & Accountability

OPEN TO CHALLENGES OF LEARNING
- GRIT- Growth, Resilience, Integrity, Tenacity

FAIR, RESPECTFUL, & WELL ROUNDED
- REACH- Respect, Encourage, Appreciate, Communicate, Honor

LEAVE A LEGACY
- We Before Me (Service)

Ms. Moon's Schedule:

1st Period 8:20 - 9:06	2nd Period 9:12 - 9:58	3rd Period 10:04 – 10:50	4th Period 10:56 - 11:42	5th Period 11:46 - 1:42 *includes lunch	6th Period 1:48 - 2:35	7th Period 2:41 - 3:28	8th Period 3:34 - 4:21
PLTW District Coordinator	Engineering Design and Development	Engineering Science	Engineering Design and Development	*Conference*	Aerospace Engineering	Digital Electronics	Engineering Science

Tutoring Hours: 8:00-8:15 AM and after-school tutoring as scheduled

Engineering Design and Development (EDD) Course Description

May be reflected as Engineering Design and Problem Solving on the student's transcript

Engineering Design and Development (aka as the Senior Capstone course) provides an opportunity for our advanced STEM students to connect theory to application and prepare for college, career, and/or military entry. This course is reserved for seniors that have completed most of the Engineering Pathway. It requires maturity and a strong foundation in STEM and project-based learning. It will include college/career prep activities, a long-term design project, and a mentorship from an industry professional.

In this course, one of the most important goals is for you to discover the wonderment of Science, Technology, Engineering, and Mathematics (STEM) in an area of your choosing and to build a deeper confidence in understanding/improving the world around you by making connections between STEM and the "real world". With this deeper confidence and an exploration of your talents and interests, we will work together to identify how *you* will impact the world in a positive way and the steps needed to get there (college, career, and military readiness)!

Note: Capstone work will be shared with a public audience (i.e. – professional mentors, district/regional showcases, City Council meetings, student competitions, publications, and community events). All students are expected to present their work at a local capstone showcase event in April/May. This is a course requirement that will be a major part of the student's grade.

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Engineering Science Course Outline (Draft)

Key:
- Preparing for Postsecondary
- ❖ Capstone Project or Mentorship
- ➢ Other

1st Nine Weeks	2nd Nine Weeks	3rd Nine Weeks	4th Nine Weeks
• Explore Talents, Goals, and Passions to Identify Postsecondary Plan • Complete Surveys to Discover More About Yourself and to Optimize the Way We Work with Others • Develop Portfolios • Create Resumes • Develop Plan for College /Career • Learn and Practice Effective Essay Writing • Apply to College(s)/ Postsecondary Program(s) • Complete FASFA Paperwork ❖ Define Capstone Project Statement, Criteria, and Constraints ❖ Create, Present, and Refine Capstone Proposals	• Continue Preparing for Postsecondary Plan ❖ Create Project Management Flow Charts and Gantt Chart ❖ Start Design Process for Capstone Project ❖ Start Mentorships	• Continue Preparing for Postsecondary Plan • Apply for Scholarships ❖ Build, Test, and Refine Capstone Designs ❖ Continue Mentorship Goals ❖ Conduct Site Visits ❖ Research Chosen Topic Related to Capstone Project ❖ Effectively Use APA Formatting ❖ Write and Refine Technical Paper	• Continue Preparing for Postsecondary Plan • Update Portfolio ❖ Prepare Final Documentation for Capstone Project ❖ Present Capstone Project ➢ Cardboard Furniture Project ➢ Engineering Ethics

Class Culture

The culture 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

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teamwork, professional communication, and project management. My classes are rigorous, and my expectations are high, but the rewards are great!

It is important that you take thorough hand-written notes in your engineering journals since your notes will be your 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.

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 product/presentation, and metacognition.

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. Nobody is allowed in the shop area or the storage room without Mrs. Moon's or Mr. Labram's permission.

2. Respect Property:
   - Use furniture properly.
   - 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, trays, and food packages in the trash can OUTSIDE my room. Eating in my room is a privilege, not a right.

"Freedom and responsibility go hand in hand!"

Classroom Procedures

1. Everyone must participate. This is how 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 steps used for all solutions must be neatly recorded.

4. Your journal should be your first resource for questions. Your second resource is your team.

5. The teacher dismisses class. Please do not line up at the door before dismissal.

Absences and Make-up Work

*See district handbook.

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. This is especially important for assignments related to a team project. NOTE: Per campus policy, if you are absent for school-related or pre-scheduled activities/events on the day an assignment is due, you are required to turn in the assignment prior to the absence for the event.

NOTE: A zero will be entered into the gradebook for any missed/late work (even if you are granted an extension due to an absence), but that grade will be updated when the make-up work is submitted.

Discipline

*See campus handbook.

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.

Grading Policy

*See campus handbook.

- 25% of 6 weeks grade: 6 or more Daily Grades
- 15% of 6 weeks grade: 3 or more Homework Grades
- 60% of 6 weeks grade: 2 or more Major (Test/Project) Grades

NOTE: Semester exam grades are 1/7th of the semester averages.

- Projects will be assessed using a rubric and will carry the weight of at least one test grade.
- Traditional tests and quizzes, peer evaluations, progress checks, live performance evaluations, and metacognition activities will factor into your grade.
- I may conduct unannounced evaluations of your engineering journals, and you will be periodically allowed to use your journals on assessments, so please ensure your journal is always up-to-date.

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

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