

Naperville North High School Research and Design Syllabus

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CTE Office: 125

Department Chair: Melissa Oskroba

District Mission

To educate students to be self-directed learners, collaborative workers, complex thinkers, quality producers, and community contributors.

Department Mission

In partnership with the community, Career and Technical Education (CTE) provides students with real-world experiences. Students will discover and explore their passions which will lead to career opportunities and the development of life skills.

Course Description

Research and Design is a course for the student who wants to explore engineering as a career. This course uses STEM (Science, Technology, Engineering, Mathematics) project based assignments. The student will learn the physics of how simple machines work through a series of hands-on activities and projects. Problem solving is utilized to overcome problems of design, development, production, and the testing of a product. Topics covered are from both applied technology and science, which could include but not limited to; robotics, pneumatics, hydraulics, CAD (computer aided drafting), optics (including lasers), mechanical, electricity and magnetism. Students will work in design teams and present their achievements to the class in various competitions. May be used for Science credit, or split between Science and CTE. – 2 Science credits – Co requisite: Algebra 2

Course Textbook & Resources

Research and Design Canvas course, project module folder.

Course Standards & Weights

This course utilizes the following standards throughout every project. The breakdown of those standards are located next to the projects taught throughout this year-long course.

NGSS Science Standards
 NGSS Engineering Standards
 Technology Literacy Standards
 Common Core Mathematics Standards
 ELA Standards

Pin-Hole Camera [HERE](#)
 Cardboard Boat [HERE](#)
 Hovercraft [HERE](#)
 Launcher [HERE](#)
 Remote Control [HERE](#)

Units of Study:

Semester 1

- 3D Design (Autodesk Inventor)
- Shop safety (machine tools)
- Thin Lens equation (Pinhole Camera)
- Buoyancy (Cardboard Boats)
- Lift and Drag (semester final project)

Semester 2

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- Projectile Motion (Launchers)
- Remote Control (Semester final)

Grade Calculation Definitions

Students will be provided with multiple and varied opportunities to demonstrate mastery of learning standards. Although varied in content, all courses will include examples of practice and evidence of learning:

- **Evidence of Learning:** Tasks or assessments where feedback is provided to the student and considered evidence of a student's level of proficiency on a given standard or skill. This may include, but is not limited to formative tasks that provide insights on areas for growth as well as summative tests, projects and/or performances.
- **Practice:** Tasks that are connected to course standards and learning targets that promote the development of skills and/or knowledge that will be assessed, but where feedback is not provided. This may include, but is not limited to daily readings, note-taking, practice exercises, and tasks essential to the learning process.

Grading Disbursement

Semester grades for all classes (prior to the final exam) will be calculated by a weighted average. As part of the calculation for the overall semester grade, final exams/projects will not exceed 15% of the semester grade.

A = 100-90%, B = 89-80%, C = 79-70%, D = 69-60%, F = 59-0%

Semester Grade:

- Coursework = 85%
- Final Exam = 15% *Final Exam Format:* Final Project

Grading Practices

Grades communicate each student's progress toward mastery of goals/standards for the course.

- Infinite Campus Symbols/Comments:
 - A score of "Missing" (M) will indicate an assessment has not been turned in and the comments section will include a specific date by which students can still submit. After that date, a zero (0) will be recorded.
 - Any score may also have a comment indicating the due date, turned in, late, reassessment eligibility including the timeline and/or reassessment final scores.
 - A zero indicates that no attempt was made by the student. If a legitimate attempt is made on an assessment and practice work has been completed in a consistent and timely manner (*completing 80% of practice listed in Infinite Campus.*), a score of 50% will be the lowest possible grade.
- Late Work:
 - Evidence of Learning work submitted after the original due date cannot be penalized more than a total of 10% and can be submitted for credit up to 5 days after the original due date.
 - Practice Work is not accepted for credit after the due date.
- Other:
 - No extra credit will be issued.

D203 AI Belief Statement

At Naperville North High School, we strive to build a learner's mindset in all students, developing qualities such as adaptability, communication, critical thinking, and global citizenship. Generative Artificial Intelligence (AI), offers new opportunities to engage with important technology relevant to the future that also raises significant educational considerations. AI tools provide unique ways to engage students in the learning process, hence we encourage our staff to guide students in using AI responsibly. Teachers have the authority to establish guidelines

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Academic Integrity Code

for AI use in their classrooms, setting clear expectations for how AI can be used on learning tasks. Concurrently, we recognize that reliance on AI risks replacing genuine student engagement and original thought, undermining the attributes we aim to cultivate. Striking a balance between leveraging AI tools effectively and maintaining educational standards is crucial to the learning experience of each student.

District 203 students are challenged to address the academic process enthusiastically, diligently, and most importantly, honestly. It is the responsibility of our students, teachers, and administration to uphold the fundamental academic values of honesty, responsibility, fairness, respect and trust. The integrity of our district's academic programs is built upon these principles.

Academic integrity violations include cheating, plagiarism, self-plagiarism or copy infringement, obtaining or providing an unfair advantage, using a writing service and/or AI in place of original work unless specifically authorized by staff, falsification of documents, unauthorized access to records, and inappropriate collaboration, whether intentional or unintentional. The classroom teacher and administration will collaborate and exercise professional judgment in determining academic integrity violations.

Reassessment Policy

The purpose of reassessment is to allow students to demonstrate mastery of course standards in which they remain deficient. Higher reassessment grades will replace the original assessment score, but will not exceed 85%.

- Practice work is not eligible for reassessment.
- Evidence of Learning work may be eligible for reassessment. Refer to the chart below for eligibility:

<input type="checkbox"/> The assessment included multiple opportunities for feedback and improvement in the process for the final product OR formative assessments are aligned to standards, allow students to practice in the same assessment format, and gain feedback for improvement before the summative assessment.	<input type="checkbox"/> There was timely and consistent completion of practice work and formative assessments. <input type="checkbox"/> A one-time performance on an assessment does not reflect the student's level of proficiency leading up to the assessment. <input type="checkbox"/> Summative assessment score is below 85%.
Not eligible for reassessment	Eligible for reassessment if all three statements above are true.

Reassessment Parameters:

- The reassessment opportunity will require designated learning experiences that demonstrate readiness as assigned by the teacher.
- Reassessments MUST be completed within 5 school days of the student receiving feedback unless otherwise determined by the instructor. The reassessment deadline should be communicated in an IC comment.

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Student Communication

- The final reassessment score will be capped at 85%.
- You are encouraged to communicate with their teacher regarding questions.
- Teachers make every effort to respond to emails and phone calls within 24 hours during the workweek.
- The best way to communicate with teachers is through email; however, if you haven't received a response within 48 hours, please resend the email or call their voicemail. Your email may have been filtered.

Additional Resources for Support

- You can make an appointment with your teacher should you need additional instruction or support in learning material.
- You can attend peer tutoring in the Lit Center during lunch periods to receive extra support or to work on assignments.
- You can drop in to work with a peer tutor during lunch periods or before school in the Literacy Center.

Parents or Guardians Partnership

Naperville North believes in a collective partnership with parents/guardians which provides students the best opportunities for success.

Some ways parents/guardians can support their student's learning are:

- Actively check Infinite Campus for their student's grades.
 - Infinite Campus is a tool to progress monitor student work until the final course grade is posted.
 - Monthly progress grades are posted and represent the current grade of a student in the course at that moment in time.
- Discuss missing assignments, reiterate due dates, help organize folders, materials, assignment notebooks, and review upcoming projects and assessments.