

Course Description: This semester course uses solid modeling software (a sophisticated mathematical technique for representing solid objects) as part of the design process. Utilizing this design approach, students understand how design influences their lives. Students also learn sketching techniques and use descriptive geometry as a component of design, measurement and computer modeling. Students brainstorm, research, develop ideas, create models, test and evaluate design ideas and communicate solutions.

Course Goals:

1. To differentiate between science and technology. Science is the study of the natural world, while technology is the study of how humans develop new products to meet needs and wants.
2. To discover that teams of people can accomplish more than one individual working alone.
3. To notice that technological change is seen through inventions, innovations, and the evolution of technological artifacts, processes, and systems.
4. To learn that technology can have positive and negative social, cultural, economical, political, and environmental consequences.
5. To learn that engineers, designers, and engineering technologists are needed in high demand for the development of future technology to meet societal needs and wants.
6. To create an engineering notebook, used to record original ideas or designs.
7. To develop a portfolio as an organized collection of best works.
8. To design teams use brainstorming techniques to generate large numbers of ideas in a short amount of time, striving for quantity, not quality.
9. To learn about and create a design brief as a tool for defining the problem; it is an agreement between the engineer and the client.
10. To use design briefs to explain the problem, identify solution expectations, and establish project constraints.
11. To understand that a decision matrix is a tool used to compare solution ideas to the criteria so that you can select the best solution.
12. To convert between both English and Metric systems of measurement.
13. To accurately measure; it is important at school and at home, at work and at pursuing hobbies.
14. To differentiate between precision measuring tools that is needed for accuracy. Tools must be used correctly to ensure accurate measurements are taken.
15. To explain that quality workmanship and accurate measurements with precise instruments are necessary to successfully solve problems.
16. To develop the ability to create a rapid, accurate sketch is an important skill to communicate ideas.
17. To model orthographic drawings of an object, used to provide information that a perspective drawing may not be able to show.
18. To apply dimensions to drawings to communicate size information.
19. To demonstrate that simple geometric shapes are combined and joined to create a representation of an object.
20. To use three-dimensional computer modeling for descriptive geometry, geometric relationships, and dimensions to communicate an idea or solution to a technological problem.
21. To explore that when individual objects are assembled together, their degrees of freedom are systematically removed.
22. To understand that the fabrication of a prototype is the opportunity for the designer to see the product as a three-dimensional object.

II. Course Content and Time Schedule

- a. First Quarter
 - i. What is Engineering
 - ii. Impacts of technology on Society
 - iii. Design Process
 - iv. Measurement: Standard and Metric units
- b. Second Quarter
 - i. Sketching and Dimensioning
 - ii. Designing for production: Prototype, Model, Mock up

III. Course Activities

- a. Investigations / Activities
- b. Readings / Discussions / Notes
- c. Project / Presentations

IV. Evaluation

a. Criteria for arriving at students grades

- i. Class Assignments 50%
- ii. Participation 15%
- ii. Assessments 35%

*Semester exams will not be administered early and make up 20% of the final semester grade.

Students who are absent may make-up their exams on the district approved make-up day.

b. Explanation of Student Grades

- i. A 100 – 90%
- ii. B 89 – 80%
- iii. C 79 – 70%
- iv. D 69 – 60%
- v. F 59 and below

c. How and When Students will be Advised of Their Grades

- i. Parents and students are urged to check the Infinite Campus Portal on our website regularly.
- ii. Progress reports will be issued at mid-quarter
- iii. Student grades will be posted in the classroom bi-weekly.

d. Citizenship/Behavior Expectations - **Citizenship *is not* linked to academic achievement.**

- i. The "O" grade is held in very high esteem by students and parents alike; thus, it should be neither awarded nor withheld lightly. The "O" carries with it possible nominations for all students to the Junior Honor Society and for various school awards and/or privileges.
- ii. *Leadership* is a definite factor in the awarding of an "O." Leadership can be overt, by accepting active leadership roles in class or school organizations, or it may be covert, by leading by example or dedication. Excellent citizens may also be enthusiastic followers.
- iii. To establish as much uniformity as possible in the awarding of citizenship grades, the following criteria should be applied: Movement in the class is appropriate for the activity at hand; Student will act respectfully toward the teacher and other students; Student will obey class and school rules.
- iv. A few lapses in the behavior may result in a student receiving a grade of "S."
- v. Occasional lapses in the behavior may result in a student receiving a grade of "N."
- vi. A grade of "U" may be given if identified student misbehavior continues, but only if parent contact, specifically regarding the behavior, and/or a dean's referral has been made. The "U" grade is cumulative and is not to be awarded for a single spectacular outburst.

Citizenship is taken very seriously here at Leavitt Middle School. Teachers expect the very best from their students every day. Students are responsible for following all District, School-Wide Rules, and Leavitt's Five "T's," and Acceptable Use Policy computer network rules. Additionally, students are expected to bring supplies to class, pay attention, stay on task, talk when appropriate, be respectful to all teachers and students, avoid nuisance items (such as cell phones, iPod, etc), and not chew gum. Students who cannot work within these expectations will have points deducted from their citizenship grades. Other actions which disrupt the learning environment of the classroom or other students will also be documented and points will be lost.

e. Make-up and Late Work Policy

- i. If there is an absence, the *student* is responsible to collect the assignment, complete it on their own time (before/after school), and return it within 3 days from absence.
- ii. Late work will be accepted the next 2 days without penalty. Assignments turned in 3-7 days after the due date will receive a 10% deduction. Any assignments turned in after the 7 days can receive 50% credit.
- iii. Tests/Assignments with a score lower than 70% may be retaken, upon the *student's* request, within a week after the assignment's grade is posted. Students need to schedule the retake with the teacher.

V. Supplies Needed for this Course

- a. **PENCIL and PEN** – Black or Blue ink pens will be used every day and will be subject to random quiz grades. You will need both every day. I do not loan or supply pens! It is the student's responsibility.
- b. One pair of headphones/earbuds
- c. One Flash Drive - at least 4 gb
- d. Colored pencils, markers, scissors, glue, ruler, graph paper; all to be kept at home for completing assignments. When needed in class, these items will be provided.

VI. Utilizing technology to learn:

This year, at Leavitt Middle School, we want to encourage the daily use of technology in and out of the classroom to further enhance the educational experience. As such, Leavitt will be providing students with individual devices to utilize in class and at home. Students will also be provided with a Google email address to correspond with their teacher and classmates on projects, as well as to turn in assignments. Students may choose to utilize their own electronic tablets (iPads, Kindle Fire, Samsung, etc.) cell phones, laptops, and reading devices for educational purposes. Please be reminded that your student is responsible for the safety of their personal device and must utilize the district's Wifi to ensure their internet safety. All use of these devices will be for educational purposes and must be approved by the individual teacher.

VII. Teacher's Hours of Availability

- a. Monday – Friday – 8:30-8:55 (by appointment)
- b. Monday – Thursday – 3:30-4:00
- c. Parents may contact me via:
 - i. Leavitt Middle School – 702.799.4699
 - ii. Leavitt Middle School Website – www.leavittms.net
 - iii. Email – neiryjj@nv.ccsd.net