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| **School Year** | 2013-2014 | **Teacher Name** | Reese Merrell |
| **Room/Office** | 648 and 231 | **Website** | http://msmerrellmath.weebly.com |
| **Phone** | 720.972.4600 | **Email Address** | Larisa.T.Merrell@adams12.org |

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| **Course Name** | **Introduction to Engineering Design** |
| **Course Description** | Introduction to Engineering Design (IED) exposes students to design process, research and analysis, teamwork, communication methods, global and human impacts, engineering standards, and technical documentation. IED gives students the opportunity to develop skills and understanding of course concepts through activity-, project-, and problem-based (APPB) learning.  |
| **Unit of Study** | **Grade Level Expectations/Content Standards** | **Approximate Time Spent or Percent of Time Spent** | **Targeted Date of Assessment** |
| Unit 1Design Process | * Complete a design project utilizing all steps of a design process.
* Utilize research tools and resources to gather and interpret information.
* Generate non-technical concept sketches to represent objects or ideas.
* Deliver organized oral presentations of work tailored to the audience.
* Contribute to a positive team dynamic.
 | 17 days | 9/13/2013 |
| Unit 2Technical Drawing | * Identify the proper use of each technical drawing representation.
* Hand sketch isometric views of a simple object or part.
 | 12 days | 10/1/2013 |
| Unit 3Measurement & Statistics | * Use statistics to support design decisions, and justify problem solutions.
* Use dimensional analysis and appropriate units in solving problems.
* Measure linear distances with accuracy and precision.
 | 13 days | 10/18/2013 |
| Unit 4Modeling Skills | * Create three-dimensional solid models of parts within CAD.
* Generate CAD drawings according to standard engineering practice.
* Dimension and annotate drawings according to engineering practice.
* Create assemblies of parts in CAD and using assembly constraints.
 | 18 days | 11/14/2013 |
| Unit 5Geometry  | * Define and identify physical properties.
* Use physical properties to solve design problems.
 | 15 days | 12/10/2013 |
| Unit 6Reverse Engineering | * Perform a functional analysis of a product.
* Identify shortcoming of a design and/or opportunities for innovation.
 | 12 days | 1/23/2014 |
| Unit 7Documentation | * Generate CAD drawings according to standard engineering practice.
* Dimension and annotate drawings according to engineering practice
* Create a CAD assembly drawing with id numbers and parts list.
 | 19 days | 2/21/2014 |
| Unit 8Advanced Computer Modeling | * Determine the fewest number & types of views needed to detail a part.
* Choose the best orthographic view of an object to use as a front view.
* Create a set of working drawings to detail a design project.
* Create specific notes to detail a technical drawing.
* Dimension orthographic projections and section views of objects.
* Create relationships among part dimensions using parametric formulas.
 | 14 days | 3/18/2014 |
| Unit 9 Design Team | * Complete a design project utilizing all steps of a design process.
* Utilize research tools and resources to gather and interpret information.
* Use a decision matrix to evaluate & compare multiple design solutions.
* Define and discuss the importance of norms in an effective team.
 | 28 days | 5/6/2014 |
| Unit 10Design Challenges | * Complete a design project utilizing all steps of a design process.
* Demonstrate positive team behaviors and contribute to a positive team dynamic.
 | 10 days | 5/20/2014 |

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| **Grading Scale** | **Grade Percentages/Weights** |
| **A** | 90-100 | **Formative\***20% | **Summative\***80% |
| **B** | 80-89 |
| **C** | 70-79 |
| **D** | 60-69 | **\*Weekly progress grades are posted at https://ic.adams12.org/campus/portal/adams12.isp** |
| **F** | 59 or below |

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| **General Expectations*** Grades are based upon the demonstration of proficiency on units associated with a standard given during each formative or summative assessment. Formative grades in addition to summative unit assessments will be used to holistically determine your grade.
* **Summative: 80%** Summative measures of achievement are taken when unit mastery is expected. (i.e., unit tests, culmination of a project, embedded assessments, etc.)
* **Formative: 20%** Formative assessments measure the scaffolding skills and/or content embedded in the unit. Formative assessments are taken frequently, after a student has practiced a skill or become familiar with content. Examples of formative assessments include but are not limited to exit tickets, paragraphs, oral check for understanding, warm-ups, stages in a large project, etc.
* Assessments will be graded based on teacher/district/state rubrics.
* For group projects, students will receive a grade for individual work and a group grade.
* Grades are based on achievement of Content Standards and Grade Level Expectations.
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| **Class Expectations****Missing or incomplete assignments/assessments for this course:** Superintendent Policies 6280 Homework and 6281 Make-Up Work, will be followed for this course.  |
| **Additional Help:** * I will be available in room 231 during 8th hour most days to give extra help. Please let me know if you plan on stopping by. If that time does not work, please set an appointment.

**Materials and Supplies Needed Daily*** Paper, Pencil, Engineering Notebook

**Accommodations*** A variety of teaching techniques are used to meet the diverse needs of students. I am available by phone or appointment to discuss concerns or needs of students with special needs.

**Assessments Used To Evaluate Student Progress*** Projects, Assignments, Investigations, Observations, Participation, Quizzes, and Tests

**Motivation Used*** A variety of hands-on techniques, investigations, real-world contexts and group work that engage and stimulate students to think about math are a part of this curriculum.
* Students are encouraged to be engaged and motivated in the completion of their assignments.
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| **Student Expectations** |
| **Time Frame for Completion of Assignments*** Assignments are due on the date given for each individual assignment.

**Expectations for Classroom Behavior*** Help create an effective learning environment.
* Be in your seat with all supplies, materials and assignments, ready to work when class starts.
* Respect others and their personal property.
* Plan ahead: use the restroom, get drinks, and take care of all personal needs between classes.
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Please sign and return the section below:

I have read and understand the policies for this class.

Student: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_

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Parent/Guardian:

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