

URBANDALE COMMUNITY SCHOOL DISTRICT  
CURRICULUM FRAMEWORK

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SUBJECT:	Vocational Education
COURSE TITLE:	Introduction to Engineering Design
PREREQUISITES:	Minimum grade of C in 2 of the following: CAD I, CAD II, Computer Apps I or instructor approval
	2 Semesters

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**COURSE DESCRIPTION:**

Introduction to Engineering Design is the first course in Project Lead the Way program. The course is design to engage students through a combination of activity-based, project-based and problem-based learning. It will require students be prepared to apply problem solving skills, work in a team, speak to a public audience, conduct research, analyze data, and learn outside of the classroom. Introduction to Engineering Design uses a design development process while enriching problem-solving skills. Students will create and analyze models using specialized computer software.

**CONTENT STANDARDS AND BENCHMARKS:**

In order that our students may achieve the maximum benefit from their talents and abilities, the students of Urbandale Community School District's Introduction to Engineering course should be able to...

**Standard I: Demonstrate comprehension, computation, and applied technology skills.**

- Benchmarks: Develop effectively a 2D or 3D model to represent an idea or process.  
Integrate effectively several software packages to develop various products.  
Demonstrate technological etiquette and ethics.  
Analyze and recognize new uses for technological processes and products.

**Standard II: Develop communication, employability and life management skills.**

- Benchmarks: Identify and adapt design to meet needs of a consumer/client.  
Demonstrate appropriate preparation and organizational skills for class.



## **CONTENT STANDARDS AND BENCHMARKS WITH INDICATORS:**

In order that our students may achieve the maximum benefit from their talents and abilities, the students of Urbandale Community School District's Introduction to Engineering course should be able to...

### **Standard I: Demonstrate comprehension, computation, and applied technology skills.**

#### **Benchmark: Develop effectively a 2D or 3D model to represent an idea or process.**

Indicators: Manipulate shapes, forms, and program features to create models.  
Create rendered stills and animations of created models.  
Create animations and models for pre-determined purposes.

Assessments: Student-generated tutorials graded by rubric  
Tutorial products graded by rubric.  
Student-generated projects graded by rubric.

#### **Benchmark: Integrate effectively several software packages to develop various products.**

Indicators: Use animation software to create presentations of previously created CAD models.  
Combine animation software with other applications (such as sound and video editing) to create a finished animated product.  
Use various specialized software, as well as, PC and Apple based platforms, to create animations and an end-of-class DVD.

Assessments: Student-generated projects graded by rubrics  
Self-reflection

#### **Benchmark: Demonstrate technological etiquette and ethics.**

Indicators: Use copywriter materials appropriately for class projects.  
Completes orientation for Independent Use of Internet and e-mail.  
Follow guidelines regarding use of technology.

Assessments: Student-generated projects graded by rubric  
Self-reflection  
Teacher and peer observation

#### **Benchmark: Analyze and recognize new uses for technological processes and products.**



Indicators: Design animations based on client need and student interest (not dictated by perceived hardware/software limitations).  
Critique both amateur and professional computer generated products.  
Analyze product development.  
Use various processes to come up with creative solutions.

Assessments: Student-generated products graded projects graded by rubric  
Written critique graded by rubric  
Teacher observations  
Self-reflection

**Standard II: Develop communication, employability and life management skills.**

**Benchmark: Identify and adapt design to meet needs of a consumer/client.**

Indicators: Create a list of consumer/client needs.  
Develop solutions based on expressed needs.  
Refine needs into finished design.

Assessments: Client reviews  
Student-generated designs graded by rubric

**Benchmark: Demonstrate appropriate preparation and organizational skills for class.**

Indicators: Bring proper materials to class.  
Maintain a filing system for class handouts.  
Create directories on computer for file organization.  
Complete and submit class work on time.  
Arrive on time to class.  
Demonstrate good attendance.  
Complete work to best of ability.  
Organize workloads.

Assessments: Daily learning journal graded by rubric  
Self-reflection  
Student-generated products graded partially by fulfillment of deadlines  
Student participation graded by point system based on minutes used of effective class time use  
Due date achievement graded by inclusion in rubrics

No student enrolled in the Urbandale Community School District shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination in the District's programs on the basis of race, color, creed, sex, religion, marital status, ethnic background, national origin, disability, sexual orientation, gender identity, or socio-economic background. The policy of the District shall be to provide educational programs and opportunities for students as needed on the basis of individual interests, values, abilities and potential.

