# KENT CAREER TECHNICAL CENTER

“Providing students a world class education”

<table>
<thead>
<tr>
<th>Course</th>
<th>Engineering</th>
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<tbody>
<tr>
<td>State of MI CIP code:</td>
<td>15.1306</td>
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<tr>
<td>Michigan Career Pathway:</td>
<td>Engineering, Manufacturing &amp; Industrial Technology</td>
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</tbody>
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**Instructor**  
Mr. Larry Ridley

**Credentials**  
BS Secondary Ed; MS Career Technical Ed; NCATE Certified; Highly Qualified Status

**Contact Information**  
(616) 447-5693  
lawrenceridley@kentisd.org

**Academic Credit**  
Math; Science; English; VPAA (Visual Performing and Applied Arts)

**College Articulation**  
Grand Rapids Community College  
Baker College  
Davenport University

**Student Organizations**  
Skills USA  
MITES (MI Industrial & Technology Education Society)

**Prerequisites**  
Good basic math skills and a willingness to work. Students are required to complete an in-class visitation, or set up a personal interview with the instructor before enrolling

**Primary Text**  

**Software & Resources**  
AutoCad 2017; Inventor 2017; Solidworks 2016; 3D Printing; Moodle; Career Cruising

**Program Description**

The one or two-year Engineering course builds mechanical design, engineering, and manufacturing skills by taking students from basic drafting concepts to practical and advanced design projects using the latest CAD software and techniques. Upon completion of the course, students will have in excess of 425 clock hours of project-based drafting and design engineering experience.
Course Skill Areas (425 Total hours):

**Introduction to Drafting (15 hours)**
- Engineering/Design concepts
- Measurement/Scales
- Drafting standards
- Orthographic projection concepts
- Lettering/Sketching
- Geometric constructions

**Computer-Aided Drafting (180 hours)**
- File management
- Introduction to AutoCad software
- Single-view drawings
- Orthographic projection/multi-view drawing
- Introduction to Inventor software
- English and metric thread representations
- Drilling & tapping threaded holes
- Introduction to Solidworks software
- Precision measurement with micrometer & caliper
- Reverse engineering of existing parts
- Solid/parametric modeling
- 3-Dimensional scanning
- 3-Dimensional printing
- Dimensioning rules/standards
- Section drawings
- Primary & secondary auxiliary drawings
- Assembly drawings
- Bill of materials/cost estimation

**Engineering Design Projects (130 hours)**
- Introduction to design/build projects
- Engineering/Machining program collaboration
- Project team presentation/showcase

**Applied Skills (50 hours)**
- Mathematics/geometry
- Personal/time management
- Problem-solving
- Teamwork
- Technical writing/research
- Physics
Career Preparation/Work-Based Learning (50 hours)

- Resumé building
- Job application
- Cover letter
- Portfolio creation
- Mock job fair
- Mock interview
- Job shadow
- Industry field trips
- College exploration
- Paid/unpaid cooperative employment (when available)

Exit Outcomes

Students will be well-prepared for entry-level employment or post-secondary college enrollment in an engineering-related field.

Grading Policy

KCTC supports grading practices that are consistent, accurate, meaningful and supportive of learning.

KCTC grades are reported in two ways – Semester grades (A, B, C, D, E) and a year-end Certificate identifying a proficiency level on each course standard.

KCTC issues grades on a quarterly (9 week) basis. This quarter grade is composed of 65% Technical skills, 5% Daily activities, and 30% Career and Employability skills.

The semester grade is determined by combining the two quarterly grades, the semester industry evaluation, and the embedded academic content within a course. Each quarter counts for 42% of the grade, the industry evaluation counts for 10% of the grade, and the academic content counts for 6% of the grade. When viewing grades on PowerSchool, it is always important to look at the S1 or S2 grade as the overall in-progress grade for the course.

Technical skill grades are issued on assignments and assessments which represent a total number of points earned. This total number determines a percentage of points earned and a letter grade is assigned accordingly. Assignments and assessments in this type of grading are categorized as either formative or summative. Formative work guides learning. Summative work measures how well something has been learned. Summative work is weighted more than formative work. Students may earn the opportunity to redo or retake summative assignments and assessments. These retakes must be completed by the end of each quarter.
Students will be issued Career and Employability summative scores at least twice per quarter to provide feedback on the skills of Teamwork, Problem Solving, and Personal Management. Students will also earn scores in Career Planning. The combination of these scores will determine the Career and Employability skills grade.

Pre and Post Testing – at times, students will be asked to complete pre-instruction assessments to aid the teacher in designing learning. These pre-assessments will be scored, but they will not affect the student grade. It is important for a student to make their best attempt on a pre-instruction assessment to help the teacher design appropriate instruction. After instruction the student will complete a post-instruction assessment to determine how well they learned the skill. This will be scored and will affect the student grade.

Additionally, scores are issued to students to reflect the proficiency level they have achieved on particular Industry Standards. The Standards scoring scale: 0 – Not attempted or Minimal Knowledge, 1 – Beginning Proficiency, 2 – Developing Proficiency, 3 – Proficient (meets industry standard), and 4 – Advanced Proficient. Students will also be issued a quarterly Standards score (0 – 4) in the Career and Employability skill areas of Teamwork, Problem Solving, Personal Management, and Career Planning. At the end of each year, students will be issued a Standards score (0 – 4) in the area of career writing proficiency and math proficiency as well. These scores are reported on the year-end Certificate which is used by employers to assess industry skill levels.

**Attendance Policy**

Students should attend and be on time each day of class to ensure success. For details, see the KCTC Student Handbook and the specific classroom guidelines.

**Late / Makeup Work Policy**

In accordance with industry standards and expectations approved by the program Advisory Committee, classroom assignments and projects should be completed and turned in by the posted deadlines. Failure to do so will result in a percentage deduction of the student grade, 5% per class period after the deadline. If the work is not submitted according to classroom guidelines after three days past the deadline, the assignment or project will no longer be accepted and a 0% grade will be posted.

All students have electronic access to assignments at all times; therefore, deadlines must be met regardless of absences or tardiness.
Classroom Guidelines:

**Computer and Classroom Equipment**
- Respect & keep all equipment and areas clean
- Follow safety requirements
- No use of power equipment without teacher present
- Do not add any software programs
- **NO** computer games
- Internet usage is for class purposes only
- Log off or shut down at the end of class
- Return objects where you found them

**Classroom Learning Requirements**
- Respect all students and teachers
- Work Hard
- Exceed expectations (go the extra mile)
- Professional dress is required of all students on specific days
- Bring your own pencil and pen every day
- Listen, read, and follow directions and instructions carefully
- Take all notes and use provided references
- Complete & submit all assignments and projects by required deadlines
- Save all files on your student network drive only
- Backup all files on a regular basis on a personal flash drive

**Student Code and Behavior**
- Follow all emergency procedures for the classroom and building
- Personal phones/mobile devices **not to be seen or used** in the classroom without permission (**turn off and put away before entering classroom**)
- Music can be listened to with headphones only
- No meals in class
- Snacks and drinks are allowed if purchased before class
- Bakery visits during class with permission only
- Obey all parking rules and regulations
- Medications must be prescribed to be taken during school hours (no OTCs)
- Use appropriate language at all times
- Dress appropriately (see Student Handbook)
- Wear shoes at all time (no flip-flops)
- RTC (Responsible Thinking Center) for disruptive behavior