TMJ 4M

Manufacturing Engineering Technology

Teacher	Mr. Pemberton scott.pemberton@ocdsb.ca Room 169, The Makerspace
Required Materials	Binder, lined paper, pen / pencil, **laptop*** *** HIGHLY recommended**
Course Enhancement Fee	**Total $25 + $5** $10 for Combination Tool project and Inlaid Ring (stock & consumables) $15 for CNC plasma, 3D printing, & milling materials $5 for safety glasses **(may provide your own)** *students are welcome to purchase additional materials

Course Profile

This program is highly recommended for those considering **Engineering** and related **Skilled Trades**. Interested students are given the opportunity to participate in a **Tetra Society** project (http://www.tetrasociety.org/). This course enables students to develop knowledge and skills by giving them an opportunity to design and fabricate products using a variety of processes, tools, and equipment. Students will combine modern manufacturing techniques and processes with computer-aided manufacturing as they develop critical decision making, problem solving, and project management skills. The Design unit utilizes CAD software and students will have an opportunity to explore CNC manufacturing. Students will develop an awareness of environmental and societal issues related to manufacturing, and will learn about pathways leading to careers in the industry and related professions. **The prerequisite to this course is TMJ 3M.** You **must** be enrolled in Manufacturing Engineering and / or Computer Engineering in order to participate in **First Robotics**. Students are encouraged to join our **Manufacturing Specialist High Skills Major**:
https://drive.google.com/file/d/14TMW_GlGA5GJDUuajYD2VOGuq23a8Crb/view?usp=sharing

Course Outline

CAD Design Unit - creating & interpreting orthographic drawings with standardized dimensions

Safety Unit - covers safe operating practices for required tools
Skills Units - machining (camping tool), welding (MIG basics, T-joints, and lap joints), 3D Printing / CNC Plasma / Welding Fabrication Project
Tetra / Design & Fabrication Project - TBD based on student's interests
Design Process, M & E Systems - 3 online courses
Summative - culminating task assigned at the end of the course (The Ring)

Course Evaluation

Course evaluation is divided into 70% term work and 30% final summative task. Details of how the 70% term mark is derived are included below. For explanations of the Ministry expectations, please follow this link:

http://www.edu.gov.on.ca/eng/curriculum/secondary/2009teched1112curr.pdf

Tasks	**Ministry Expectations**												
	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	D1	D2	D3
Design Unit Test 1				✔	✔								
Design Unit Test 2				✔	✔								
Design Bonus				✔	✔								
Safety							✔				✔		
Machining Skills - Camping Tool		✔	✔			✔	✔	✔			✔		
Welding Skills		✔	✔			✔	✔	✔			✔		
3D / CNC / Welding Fab.		✔	✔	✔	✔	✔	✔	✔			✔	✔	✔
Tetra / Design & Fab		✔	✔	✔	✔	✔	✔	✔			✔		
Design Thinking 1		✔	✔	✔	✔	✔		✔	✔	✔		✔	✔
Design Thinking 2		✔	✔	✔	✔	✔		✔	✔	✔		✔	✔
Designing and Implementing M & E Systems	✔	✔	✔	✔	✔	✔		✔	✔		✔		

When assigning new work, the evaluation rubric is provided at that time. Google Classroom is used extensively to assign and track various assignments.