

# WESTERN TECHNICAL - COMMERCIAL SCHOOL COURSE OUTLINE



**COURSE TITLE:** Technological Design

**CODE:** TDJ3/4M1

**SUBJECT AREA:** Tech

**RESOURCES:** www.mfranzen.ca

**TEACHER NAME:** Mr. Franzen

**DATE:** Sept. 2016

**PREREQUISITE:** None, Recommend TDJ2OR

**COURSE COST  
MATERIAL FEE:** None

## COURSE DESCRIPTION:

This course provides students with opportunities to apply the principles of technological design to challenges in communications, manufacturing, electronics, transportation, architecture, industrial and consumer products, health and safety equipment, and environmental services. Students will identify user needs, estimate labour and material costs, analyze material characteristics, and illustrate design solutions, using traditional and computer-based methods. They will also acquire the basic design skills required for post-secondary studies in engineering manufacturing, architecture, and construction. Focus will support FIRST robotics and the Robo program here at Western.

**COURSE DESTINATION: MANUFACTURING, CONSTRUCTION, PROGRAMMING, COMPUTERS, ENGINEERING, TRANSPORTATION AND ROBOTICS**

## COURSE UNITS:

Unit	Description	Length	Evaluation Strategies
1	Careers & Safety - Intro, computers, organization, and research career	1 Week	Research, assignments, quiz, presentation
2	Engineering Communication - technical sketching, ortho-ISO, custom ortho robot design	2 Weeks	Research, assignments, quiz, practical activities
3	Structure and Materials - materials & measurement, joints, frame, and 3D Model	3 Weeks	Assignments, test, practical activities, & demonstration
4	Driven Mechanisms - Gears, gearbox to wheel, drive train, and 1st Function	3 Weeks	Assignments, quiz, practical activities, & demonstration
5	Functions and Integration - Body base, pneumatics, 2nd and 3rd function	3 Weeks	Assignments, quiz, practical activities, & demonstration
6	Robot Assembly- Robot build, function supports, drawings and presenting	4 Weeks	Assignments, test, practical activities, & demonstration
7	Marketing and Portfolio - Web authoring, portfolio and presentation	2 Weeks	Assignments, practical activities, demonstration, & presentation

**OVERALL EXPECTATIONS:** By the end of the course students will...

**A1. demonstrate an understanding of factors and relationships that affect technological design and the design process;**

**A2. describe appropriate strategies, techniques, and tools for researching, organizing, planning, and managing design projects and related activities, with an emphasis on financial, human, and material resources;**

**A3. demonstrate an understanding of drafting standards, conventions, and guidelines for various types of drawings used to represent designs;**

**A4. demonstrate an understanding of a variety of tools, materials, equipment, and processes used to build, test, and evaluate models and prototypes;**

**A5. use appropriate terminology and communication methods to document, report, and present progress and results.**

**B1. use appropriate strategies and tools to research and manage design projects and related activities;**

**B2. apply appropriate methods for generating and graphically representing design ideas and solutions;**

**B3. create and test models and/or prototypes, using a variety of techniques, tools, and materials;**

**B4. use a variety of formats and tools to create and present reports summarizing the design process and to reflect on decisions made during the process.**

**C1. demonstrate an understanding of environmentally responsible design practices, and apply them in the technological design process and related activities;**

**C2. describe the relationship between society and technological development.**

**D1. describe and apply health, safety, and environmental practices related to technological design;**

**D2. identify career opportunities in fields related to technological design, and describe the training and education required for these careers.**

## CLASSROOM EXPECTATIONS

- Come to class on time and be prepared and willing to actively participate in every lesson.
- Ask the teacher for extra help if needed and treat others with respect and courtesy.
- Bring a 3-ring binder or equivalent with paper, pen, pencil, ruler, calculator, and minimum 5 GB flash memory stick.
- Distractions such as phones or MP3 players not to be used in class and internet use not to be abused.
- Take the initiative, be a team player, co-operative with peers, complete homework, and make your best effort.
- A focus on student project-driven teams, learning and innovating to solve challenging problems, come up with working solutions, gaining new knowledge, skills, experiences, and understanding of this course field area.

## ATTENDANCE MISSED TESTS AND EVALUATIONS

- Bring a note from parents the day after an absence to explain the absence.
- Be aware that a mark of zero will be assigned to students who miss presentations, tests or assignments without a valid explanation. It is the student's responsibility to make arrangements, ahead of time, for any evaluations that are missed. If a student misses an evaluation for an unforeseen reason such as illness or family emergency, the student must bring a note signed by a parent or guardian and be prepared to write/make-up the evaluation immediately upon return to school.

## ACADEMIC INTEGRITY

- Plagiarism and/or copying will result in a mark of **zero** for everyone involved. Further action may be taken including suspension from school. Teachers will clearly define and discuss consequences of plagiarism with students at the beginning of each semester.

## LATE ASSIGNMENTS

- All assignments must be handed in to the teacher on the due date. Late marks will be deducted from assignments handed in past the due date but prior to the cut off date. A mark of zero will be given to the student if the assignment is handed in after the cut-off date.

## MISSED EXAMINATIONS

- Students are required to write all scheduled examinations. A student who misses any examination due to illness must present a medical note, stating that the doctor was aware that a medical reason prevented the student from writing the exam.

## TEACHING/ASSESSMENT/EVALUATION STRATEGIES

**Learning Activities:** Demonstrations, presentations, illustrations, tutorials, hands-on activities, computers, practical projects

**Culminating Activities:** Final practical project and portfolio presentation

## EVALUATION OF STUDENT ACHIEVEMENT

Student achievement is measured relative to curriculum expectations across four weighted Achievement Categories (Knowledge/Understanding, Thinking/Inquiry, Communication, Application).

**Term Work:** 70% (Knowledge/Understanding, Thinking/Inquiry, Communication, Application)

**Culminating Activities:** 30% Final practical project and portfolio presentation

**Learning Skills:** including: Responsibility, Organization, Independent Work, Collaboration, Initiative, and Self-Regulation are evaluated on each Report Card as: **E** (excellent); **G** (good); **S** (satisfactory); or **N** (needs improvement).

WESTERN TECHNICAL-COMMERCIAL SCHOOL  
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Teacher's Signature

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Student's Signature

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Parent's Signature