

# WESTERN TECHNICAL - COMMERCIAL SCHOOL COURSE OUTLINE



|                      |   |                                      |                 |
|----------------------|---|--------------------------------------|-----------------|
| <b>COURSE TITLE:</b> | Computer Engineering Technology:<br>Robotics and Control System | <b>CODE:</b>                         | TEJ4M1          |
| <b>SUBJECT AREA:</b> | Technology Education  | <b>RESOURCES:</b>                    | www.mfranzen.ca |
| <b>TEACHER NAME:</b> | Mr. Franzen   | <b>DATE:</b>                         | Sept 2022       |
| <b>PREREQUISITE:</b> | Computer Technology   | <b>COURSE COST<br/>MATERIAL FEE:</b> | None            |

## COURSE DESCRIPTION:

This University/College preparation course extends students' understanding of computer systems and computer interfacing with external devices. Students will assemble computer systems by installing and configuring appropriate hardware and software, and will learn more about fundamental concepts of electronics, robotics, programming, and networks. Students will examine related environmental and societal issues, and will explore postsecondary pathways leading to careers in computer technology. Focus will support robotics and the Robo program here at Western.

## COURSE DESTINATION: UNIVERSITY/COLLEGE IN AREAS OF COMPUTERS, PROGRAMING, ROBOTICS, ENGINEERING, DESIGN, NETWORKING, AND TRANSPORTATION

## COURSE UNITS:

| Unit | Description  | Length  | Evaluation Strategies                                      |
|------|--|---------|--|
| 1    | Safety & Careers - intro, organization, safety, journals, project ideas, and career pathways                     | 3 Weeks | Research, poster, assignments, journal, presentation       |
| 2    | Computers & Components - electronics, operation, design, troubleshooting, and maintenance                        | 3 Weeks | Journal presentation, assignments, practical activities    |
| 3    | Digital Logic & Circuits - binary, boolean, logic gates, counters/register cts., calculations, design, and build | 3 Weeks | Journal, assignments, observation, practical activities    |
| 4    | Networking & Programming - IP addressing, data routing protocols, services, languages, and concepts              | 4 Week  | Journal, assignments, practical activities                 |
| 5    | Human Robot Interface & Control - custom project   | 4 Weeks | Journal, practical activities, demonstration, presentation |
| 6    | Learning showcase portfolio report   | 1 Week  | Review, reporting, peer fb                                 |

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

- A1. demonstrate an understanding of internal buses and storage devices, and of advances in computer technology;**
- A2. demonstrate an understanding of system optimization and of permissions, attributes, firmware, and communication standards used in computer systems;**
- A3. demonstrate an understanding of devices and electronic circuits in interfaces and control systems;**
- A4. demonstrate an understanding of network addressing and routing;**
- A5. demonstrate an understanding of computer logic circuits and the representation, manipulation, and transmission of data by computers.**
- B1. build computer systems and connection media to meet specific requirements, using appropriate procedures, tools, and equipment;**
- B2. maintain and troubleshoot a variety of computer hardware and software;**
- B3. design, build, test, and troubleshoot interfaces and other circuits that meet specific design requirements;**
- B4. design, build, configure, maintain, and troubleshoot networks, and set up various network services for users;**
- B5. demonstrate an understanding of programming concepts, and create programs that interact with external devices.**
- C1. analyse environmental issues related to the widespread use of computers and associated technologies, and apply strategies to reduce environmental harm from computer use;**
- C2. analyse societal issues related to the widespread use of computers and associated technologies.**

## CLASSROOM EXPECTATIONS

- Come to class on time and be prepared and willing to actively participate in every lesson.
- Treat others with respect and courtesy.
- Ask the teacher for extra help if needed.
- Bring a 3-ring binder or equivalent with paper, pen, pencil, ruler, calculator, and a flash memory stick.
- Distractions such as phones or MP3 players not to be used in class and internet use not to be abused.
- Continually expand and report on your unique learning with new related course knowledge, skills, and values.
- Take the initiative, be a team player, be co-operative with peers, complete homework, and make your best effort.

## 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, before class starts that day. Late mark of 10% will be deducted from assignments handed in past the due date, prior to the cut off date. A mark of zero will be assigned 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:** Hands-on-activities, assignments, journals, demonstrations, research, presentations, videos, illustrations, posters, tutorials, computers, controllers, programming, practical projects, circuit design and building

**Culminating Activities:** Technical report, journal entries, project reviews, related images, summaries, and conclusion

## EVALUATION OF STUDENT ACHIEVEMENT

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

**Term Work:** 85% (Knowledge/Understanding, Thinking/Inquiry, Communication, Application)

**Culminating Activities:** 15% Learning Showcase Portfolio

**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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For online access to class journal, content, student marks and resources: [www.mfranzen.ca](http://www.mfranzen.ca),

Best way to contact, is through e-mail: [Michael.Franzen@tdsb.on.ca](mailto:Michael.Franzen@tdsb.on.ca)

  
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Teacher's Signature

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Student's Signature

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Parent's Signature

Mr. Franzen  
Teacher's Name printed

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Student's Name Printed

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Parent's Name Printed