Course Outline

1. COURSE INFORMATION

Session Offered	Fall 2023
Course Name	CAD for Design
Course Code	PROCTECH 2CA3
Date(s) and Time(s) of lectures	Sevastian Irimie
Program Name	Process Automation Technology
Calendar Description	Two-dimensional drafting: drawing environment and commands, drafting settings, drawing editing, plotting output, dimensioning, orthographic projections and views, sectional and auxiliary views. Parametric three dimensional solid modeling: parts, assemblies, 2D drawings generation.
Instructor(s)	Sevastian Irimie — E-Mail: irimies@mcmaster.ca — Office Hours & Location: N/A

2. COURSE SPECIFICS

Course Description	**Engineering two-dimensional drawings**; orthographic sketching and standard orthographic projections; standard views and layouts; conventions used in views representations; auxiliary views; section views and hatching rules; text and dimensioning rules, continuous, chain, and ordinate-dimensioning; title block and bills of materials. **(Software: AutoCAD)** **Engineering three-dimensional solid modeling**; creation of prismatic parts; sketch tools, geometric and dimensional constraints; parametric modeling using design tables; creation of two-dimensional drawings from three-dimensional models; creation of full assemblies from parts with assembly constraints; interference detection, solid model part editing. **(Software: Solidworks)**

Instruction Type

Code	Type	Hours per term
C	Classroom instruction	
L	Laboratory, workshop or fieldwork	
T	Tutorial	
DE	Distance education	39
	Total Hours	39

Resources

ISBN	Textbook Title & Edition	Author & Publisher
ISBN:	No text is required for this course since numerous resources are available online and through the library. The students will use the help and tutorials included in the software and additional information provided by the instructor.	

Other Supplies	Source

Prerequisite(s)	ENG TECH 1EL3, 1PR3
Corequisite(s)	PROC TECH 2IC3
Antirequisite(s)	
Course Specific Policies	• The instructor will select for marking **one** submission for AutoCAD and **one** submission for SolidWorks as assignment grading. **One** free hand orthographic projection will also be marked as part of assignments.

	Autocad 2024 and Solidworks 2023 will be used in this course (both on Windows platform)
Departmental Policies	Students must maintain a GPA of 3.5/12 to continue in the program.
	In order to achieve the required learning objectives, on average, B.Tech. students can expect to do at least 3 hours of "out-of-class" work for every scheduled hour in class. "Out-of-class" work includes reading, research, assignments and preparation for tests and examinations.
	Where group work is indicated in the course outline, such collaborative work is mandatory.
	The use of cell phones, iPods, laptops and other personal electronic devices are prohibited from the classroom during the class time, unless the instructor makes an explicit exception.
	Announcements made in class or placed on Avenue are considered to have been communicated to all students including those individuals that are not in class.
	Instructor has the right to submit work to software to identify plagiarism.

3.   SUB TOPIC(S)

Week	Topic	
Week 1	Introduction to Engineering drawing	
Week 2	Orthographic views. Orthographic projections. Shape descriptions	
Week 3	Sectional views	
Week 4	Auxiliary views	
Week 5	Dimensioning and Tolerancing	
Week 6	**Midterm Test** (1 hr for Theory and 2 hrs for Autocad)	
Week 7	3-D Modelling: sketches, dimensions and features.	
Week 8	Building a simple 3D parametric model	
Week 9	Editing 3D models	
Week 10	From 3D models to 2D drawings.	
Week 11	Introduction to assemblies	
Week 12	Assemblies: part and assembly editing	
Week 13	Assemblies: interference checks, collision detection	
Week 14		

Classes end: Thursday, December 7
Final examination period: Friday, December 8 to Thursday, December 21
All examinations MUST be written during the scheduled examination period.

List of experiments

Lab	Description
Lab 1	Introduction to AutoCAD. Autocad Interface
Lab 2	Basic drawing commands. Drawing settings. Plotting output.
Lab 3	Drawing editing, Drawing Templates.
Lab 4	Drawing environment. Dimensions and Tolerances.
Lab 5	Introduction to Electrical, pneumatic and hydraulic schematics.

Lab 6	**Midterm Test** (1 hr for Theory and 2 hrs for Autocad)
Lab 7	3-D Modelling: sketches, dimensions and features.
Lab 8	Building a simple 3D parametric model
Lab 9	Editing 3D models
Lab 10	From 3D models to 2D drawings.
Lab 11	Introduction to assemblies
Lab 12&13	Assemblies: part and assembly editing, interference checks, collision detection

Note that this structure represents a plan and is subject to adjustment term by term.

The instructor and the University reserve the right to modify elements of the course during the term. The University may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes.

4. ASSESSMENT OF LEARNING *including dates*	Weight
Assignments	15%
Mid-term test	35%
Final examination (tests cumulative knowledge)	50%
TOTAL	
Percentage grades will be converted to letter grades and grade points per the University calendar.	**100%**

5. LEARNING OUTCOMES

1. Read, understand, create and interpret two-dimensional engineering schematics and drawings
2. Produce orthographic view, auxiliary view, section view, detail and assembly drawings of mechanical and electrical components
3. Develop engineering drawings in agreement with standardized conventions for dimensioning, text and view placing, as well as necessary documentation such as title block and bill of materials
4. Produce three dimensional parametric models of prismatic parts and assemblies of medium complexity using solid modelling software
5. Create two dimensional drawings from three dimensional models, generate drawings that include dimensions and title block information
6. Manipulate model parts if necessary to fit design constraints and final requirements

6. COURSE OUTLINE – APPROVED ADVISORY STATEMENTS

ANTI-DISCRIMINATION

The Faculty of Engineering is concerned with ensuring an environment that is free of all discrimination. If there is a problem, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant, as soon as possible.

http://www.mcmaster.ca/policy/General/HR/Discrimination_Harassment_Sexual_Harassment-Prevention&Response.pdf

ACADEMIC INTEGRITY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. It is your responsibility to understand what constitutes academic dishonesty.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/

The following illustrates only three forms of academic dishonesty: The following illustrates only three forms of academic dishonesty:
- • plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
- • improper collaboration in group work.
- • copying or using unauthorized aids in tests and examinations.

AUTHENTICITY / PLAGIARISM DETECTION

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to www.mcmaster.ca/academicintegrity.

COURSES WITH AN ON-LINE ELEMENT

Some courses may use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

ONLINE PROCTORING

Some courses may use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.

COMMUNICATIONS

It is the student's responsibility to:
- • Maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- • Use the University provided e-mail address or maintain a valid forwarding e-mail address.
- • Regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- • Accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

Check the McMaster/Avenue email and course websites on a regular basis during the term.

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• CONDUCT EXPECTATIONS

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the Code of Student Rights & Responsibilities (the "Code"). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, whether in person or online.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students' access to these platforms.

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's Academic Accommodation of Students with Disabilities policy.

REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK

McMaster Student Absence Form (MSAF): In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work".

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students should submit their request to their Faculty Office normally within 10 working days of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.
http://www.mcmaster.ca/policy/Students-AcademicStudies/Studentcode.pdf

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The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

EXTREME CIRCUMSTANCES

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.