COURSE OUTLINE: CAD401 - ADVANCED CAD

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Approved: Martha Irwin - Dean

Course Code: Title	CAD401: ADVANCED COMPUTER AIDED DESIGN
Program Number: Name	4039: MECH. ENG. TN-MANUFA 4043: MECH ENG. TECHNOLOGY
Department:	MECHANICAL TECHNIQUES PS
Academic Year:	2025-2026
Course Description:	The students will learn modern computer aided design using some of the various programs available that are used in industry today. This course will build on the students knowledge and enable them to produce workable CAD drawings ready for industry.The technician and tradesperson is required to design and understand mechanical parts and assemblies. This course will instruct the student on proper 3D solid modeling techniques as well as how to modify and work with models to produce prints.
Total Credits:	2
Hours/Week:	2
Total Hours:	28
Prerequisites:	CAD225
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4039 - MECH. ENG. TN-MANUFA** VLO 5 Use current and emerging technologies to support the implementation of mechanical engineering projects. VLO 7 Interpret, prepare and modify mechanical engineering drawings and other related technical documents. VLO 8 Contribute to the design and the analysis of mechanical components, processes and systems applying fundamentals of mechanical engineering. **4043 - MECH ENG. TECHNOLOGY** VLO 5 Use current and emerging technologies to implement mechanical engineering projects. VLO 7 Prepare, analyze, evaluate and modify mechanical engineering drawings and other related technical documents. VLO 9 Design, manufacture and maintain mechanical components according to required specifications.
Essential Employability Skills (EES) addressed in this course:	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication.

	EES 3 Execute mathematical operations accurately.
	EES 4 Apply a systematic approach to solve problems.
	EES 5 Use a variety of thinking skills to anticipate and solve problems.
	EES 6 Locate, select, organize, and document information using appropriate technology and information systems.
	EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.
	EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
	EES 10 Manage the use of time and other resources to complete projects.
	EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89% 4.00 B 70 - 79% 3.00 C 60 - 69% 2.00 D 50 - 59% 1.00 F (Fail)49% and below 0.00 CR (Credit) Credit for diploma requirements has been awarded. S Satisfactory achievement in field /clinical placement or non-graded subject area. U Unsatisfactory achievement in field/clinical placement or non-graded subject area. X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course. NR Grade not reported to Registrar`s office. W Student has withdrawn from the course without academic penalty. Attendance: A student who attends less than 80%(12) classes will receive a zero(0) for attendance Sault College is committed to student success. There is a direct correlation between academic performance and class attendance, therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session. It is the departmental policy that once the classroom door has been closed, the learning process has begun. Late arrivers will not be granted admission to the room.
Books and Required Resources:	Blueprint Reading for the Machine Trades by Russ Shultz and Larry Smith Publisher: Pearson Edition: 7 ISBN: 0-13-217220-8 Book used in Semester 1 DRF105

Course Outcomes and Learning Objectives:	Course Outcome 1	Learning Objectives for Course Outcome 1
	1. Upon successful completion of this course, the student will demonstrate the ability to modify Two dimensional sketching	1.1 Establish Sketch Planes 1.2 2D Constraints 1.3 Parametric Dimensions
	Course Outcome 2	**Learning Objectives for Course Outcome 2**
	2. Upon successful completion of this course, the student will produce Revolved and Extruded Features	2.1 Extrude Solid Parts From Sketches 2.2 Revolve Solid Parts from Sketches 2.3 Cut-outs from Parts using Extrusions 2.4 Revolved Cuts from Parts using Revolutions 2.5 Establishing Planes for Features
	Course Outcome 3	**Learning Objectives for Course Outcome 3**
	3. Upon successful completion of this course, the student will be able to demonstrate Holes and Patterns	3.1 How to Use Hole and Thread Features 3.2 How to use Patterns to Create Multiple Features
	Course Outcome 4	**Learning Objectives for Course Outcome 4**
	4. Upon successful completion of this course, the student will be able to create Assemblies	4.1 Create Assemblies 4.2 Understand Assembly Constraints
	Course Outcome 5	**Learning Objectives for Course Outcome 5**
	5. Upon successful completion of this course, the student will be able to produce drawings from 3D Models and Assemblies	5.1 Placing Principle Orthographic Views 5.2 Section Views 5.3 Auxiliary Views 5.4 Placement of Dimensions, Tolerances, Feature Control Frames, and, Comments
	Course Outcome 6	**Learning Objectives for Course Outcome 6**
	6. Upon successful completion of this course, the student will be able to utilize the Advantages of Solid Modeling	6.1 Mass Property Analysis 6.2 Check Interferences 6.3 Linked Parts and Assemblies 6.4 Editing and Modifying Parts and Assemblies

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments	70%
Final Exam	20%
Participation	10%

Date: August 1, 2025

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.