COURSE OUTLINE: RAA112 - APP OF RBT W/ SOLID

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Course Code: Title	RAA112: APPLICATIONS OF ROBOTICS/SOLID MODELING
Program Number: Name	4073: ROBOTICS & AUTOMATIO
Department:	ROBOTICS GRADUATE CERTIFICATE
Semesters/Terms:	20F
Course Description:	The purpose of this course is to familiarize students with solid modeling, parametric design application used for Mechanical/Industrial and Robotic solid design. The course is designed to provide students with an experiential learning environment through a process or task based approach to learning the individual features and functions of solid modeling software, thereby emphasizing processes and procedures for design for robotics. The course begins with an overview of the parametric 2D design environment and progresses to solids and assemblies. Advanced features of the software including top down and bottom design will be covered with a strong emphasis on design for robotic applications. Students attending this course are expected to have experience with computers and Windows operating system. Knowledge of the principles of drafting and design and is expected.
Total Credits:	3
Hours/Week:	2
Total Hours:	30
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
This course is a pre-requisite for:	RAA204
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4073 - ROBOTICS & AUTOMATIO** VLO 1 Construct and evaluate robotic control programs for various scenarios against which to model the functionality and stability of automation systems. VLO 6 Integrate budgetary, technical, functional and safety considerations in the design and optimization of custom automation solutions. VLO 7 Formulate and use a variety of troubleshooting techniques on new and legacy electromechanical equipment, processes, systems and subsystems.
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.

In response to public health requirements pertaining to the COVID19 pandemic, course delivery and assessment traditionally delivered in-class, may occur remotely either in whole or in part in the 2020-2021 academic year.

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	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.
Course Outcomes and Learning Objectives:	

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Two Dimensional Sketching	Potential Elements of the Performance: 1.1 Establish Sketch Planes 1.2 2D Constraints 1.3 Parametric Dimensions
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Revolved and Extruded Features	Potential Elements of the Performance:

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	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. Holes and Patterns	Potential Elements of the Performance: 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. Assemblies	Potential Elements of the Performance: 4.1 Create Assemblies 4.2 Understand Assembly Constraints 4.3 Bottom-up design 4.4 Top-down design
Course Outcome 5	**Learning Objectives for Course Outcome 5**
5. Drawings from 3D Models and Assemblies	Potential Elements of the Performance: 5.1 Placing Principle Orthographic Views 5.2 Placement of Dimensions 5.3 BOM tables and automatic population
Course Outcome 6	**Learning Objectives for Course Outcome 6**
6. Advantages of Solid Modeling	Potential Elements of the Performance: 6.1 Mass Property Analysis 6.2 Check Interference 6.3 Linked Parts and Assemblies 6.4 Editing and Modifying Parts and Assemblies 6.5 Motion Study

Evaluation Process and Grading System:

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

Date: June 11, 2020

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

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