Course Number	FED 101								
Course Title	Fundamentals of Engineering Design (ME)								
COURSE STRUCTURE	(2-1-2) (lecture hours/week - lab hour/week – course credits)								
COURSE COORDINATOR	B. S. Mani								
COURSE DESCRIPTION	Study technical graphics and the computer as a technical drawing tool; Introduction to projections and multi-view drawings and visualization; Discuss geometry commonly used in engineering design graphics, orthographic projections; Dimensioning techniques, tolerancing and introduction to auxiliary and sectional views; Apply software program Creo Parametric (aka Pro/Engineer, Wildfire) to various								
PREREQUISITE(S)	None								
COREQUISITE(S)									
	None								
REQUIRED, ELECTIVE OR SELECTED ELECTIVE	Required								
REQUIRED	Fundamentals of graphics communication by Gary R. Bertoline. Eric N. Wiebe ISBN:								
MATERIALS	 978-0-07-352263-0 (0-07-352263-5); 6th Edition, McGraw Hill 2010. 2. Pro/Engineer Creo Parametric 4.0 Tutorial by Roger Toogood ISBN: 63057-091-0-8. Schroff Development Corporation 2017 								
Other supplemental materials (not Required)	The Engineering Design Process, Second Edition, Ertas <i>et al</i> , John Wiley & Sons, 1996. Chapter 10– engineering ethics (p. 427 – 468)								
COMPUTER USAGE	Creo Parametric 4.0 (aka Pro/Engineer, Wildfire)								
COURSE LEARNING	Course Learning Outcomes	SOs [*]	Expected Performance Criteria						
OUTCOMES/ EXPECTED PERFORMANCE CRITERIA:	1 <i>describe</i> the design process and technical graphics used in the mechanical engineering design process.	1	Prepare Design Intent Planning (DIP) sheets for each model created: 70% of students will earn a grade of 70% or better on this project						
	2. <i>read and construct</i> basic mechanical engineering models and drawings.	1	Build more than 25 models submitted through the semester: 80% of students will earn a grade of 70% or better on this project						
	3. <i>use</i> modern solid modeling CAD software to generate model, assembly, and detailed drawing	1,4	Build the Midterm exam model: 80% of students will earn a grade of 70% or better on this question.						

	4. <i>acquire</i> a p product desig industry throu	oractical u n process agh <i>rever</i>	understa s as prac se engin	nding of ticed in neering		1, 3, 5, 7	Ansy engi Mid stude 70% ques Com engi show inclu indu will bette	wer a qu neering term exa ents will or better tion. plete a neering vcase to iding en astry: 80 earn a gr er on this	estion o ethics in am: 80% earn a g r on this reverse Project an audio gineers % of stu- ade of 7 project.	n the o of the rade of and ence from dents 0% or
CLASS TOPICS	 Introduction, design process & technical graphics used in the design process. Engineering ethics. Overview of traditional drawing tools. ANSI Standard Sheet Sizes, Title Blocks & Borders. CAD. Creo Parametric (Pro/Engineer) as a solid modeling software package. Alphabet of Lines, line drawing techniques, scales & 3-D Modeling. Creo Parametric: Creating a simple object Part I. Engineering geometry, introduction to projections, multiview, isometric, oblique, and perspective. Pro/E: Creating a simple object Part II (Hole, Chamfer, Round etc.) Implementing design intent using relations Visualizing a multiview drawing, the Six Principal Views, Multiview from 3-D CAD Model. Pro/E: Revolved protrusions, mirror copies, model analysis. Fundamental views of edges & planes for visualization. Pro/E: Obtain information, suppress, resume insert, modify features. Multiview Representation, ANSI Standards. Pro/E: Sketcher Tools & Datum Planes. Visualization of multiview drawings, & dimensioning. Pro/E: Pattern and Copy. Auxiliary View, applications. Auxiliary view in CAD. Pro/E: Engineering Drawings. Pictorial, Oblique, Perspective Projections. Section views. Creo Parametric: Engineering drawings Section views basics & by using 3-D CAD techniques. Creo Parametric: Engineering Drawings Section views basics & by using 3-D CAD techniques. Creo Parametric: Engineering Drawings Section views basics & by using 3-D CAD techniques. Working drawings, assemblies & part lists. (1 hour) Creo Parametric: Creating assembly fundamentals and Constraints; Working drawings, assemblies & part lists. (1 hour) Creo Parametric: Creating assembly drawing, sweep & blend. 									
STUDENT Outcomes	1 2	3	4	5	6	7				
(SCALE: 1-3)	1	2	2	1		3				
	3 – Strongly supported 2 – Supported 1 – Minimally supported									

* Student Outcomes