

Course Number	ME 435		
Course Title	Thermodynamics for Non-ME		
Course Structure	(3-0-3) (lecture-lab-course credit)		
Course Coordinator	P. J. Florio		
Course Description	Intended for non-mechanical engineering students of all disciplines. Topics include the basic laws of thermodynamics, properties of fluids and solids, analysis of open and closed systems, gas and vapor power cycles, refrigeration and air conditioning, and an introduction to heat transfer. Cannot be taken for credit by mechanical engineering students.		
Pre-requisite(s)	Math 211- Calculus 111; Phys 111-Physics 1		
Co-requisite(s)	None		
Required Materials	<ol style="list-style-type: none"> 1. Y.Cengel and M.Boles, <u>Thermodynamics, An Engineering Approach</u>, 7th Ed. McGraw-Hill Book Company, 2011. 2. <u>Property Table to Accompany</u> 7th Ed. McGraw Hill, 2011 3. Software: EES, McGraw-Hill 		
Computer Usage	EES Software -for Homework Problems, property values Moodle Access		
Course Learning Outcomes/ Expected Performance Criteria:	Course Learning Outcomes	SOs*	Expected Performance Criteria
	1. apply the first law of thermodynamics to a variety of physical problems.	a, c, e, k	Exam results and Tests
	2. apply the second law of thermodynamics to a variety of physical problems	a, e, k	Exam results and Tests
	3. Students will demonstrate the ability to determine the properties by use of equation or tables	a, e, k	Exam results and Tests
	4. use computer software to determine desired properties	a, e, k	Exam results and Tests
	5. analyze systems that possess various energy conversion components	a, c, e, k	Exam results and Tests
	6. analyze simple applications involving conduction, convection and radiation	a, c, e, k	Exam results and Tests
Class Topics	<ol style="list-style-type: none"> 1. Introductory concepts and definitions 2. The first law of thermodynamics, energy transfers – work 		

	and heat 3. Ideal gases 4. Thermodynamic properties of pure substances, including the use of steam and other table 5. First law analysis for open systems, steady and transient processes 6. The second law of thermodynamics and entropy 7. Air conditioning processes 8. Power and refrigeration cycles 9. Heat transfer 10. Tests plus final exam										
Student Outcomes (Scale: 1-3)	a	b	c	d	e	f	g	h	i	j	k
	3		3		2						2
	3 – Strongly supported 2 – Supported 1 – Minimally supported										

* Student Outcomes