

## FLORIDA STATE COLLEGE AT JACKSONVILLE

## COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: ETM 2315

COURSE TITLE: Mechanical Devices and Systems

PREREQUISITE(S): None

COREQUISITE(S): None

CREDIT HOURS: 3

CONTACT HOURS/WEEK: 4

CONTACT HOUR BREAKDOWN:

    Lecture/Discussion: 3

    Laboratory: 1

    Other \_\_\_\_\_:

FACULTY WORKLOAD POINTS: 3.67

STANDARDIZED CLASS SIZE ALLOCATION: 24

CATALOG COURSE DESCRIPTION:

This course covers mechanical basics, measurement devices, fluid power systems, pumps and valves, and lubricants in the industrial environment.

SUGGESTED TEXT(S): None

IMPLEMENTATION DATE: Fall Term 2008 (20091)

REVIEW OR MODIFICATION DATE: Summer 2008 (20083)  
Fall Term, 2009 (20101) - Proposal 2009-11

COURSE TOPICS	CONTACT HOURS <u>PER TOPIC</u>
I. Introduction to Mechanical Basics	5
II. Measurement Devices	8
III. Mechanical Principles	7
IV. Fluid Power Systems	10
V. Pumps and Valves	10
VI. Lubricants	3
VII. Applicable Practical Exercises	7
VIII. Hands-on testing	6
XI. Written Testing	4

PROGRAM TITLE: Engineering Technology

Specialization Tract: Advanced Manufacturing

COURSE TITLE: Mechanical Devices and Systems

CIP NUMBER: 1615.061300 AS

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S):            TITLES(S):

12.0 OPERATE, TROUBLESHOOT, AND MAINTAIN PNEUMATIC, HYDRAULIC AND ELECTROMECHANICAL COMPONENTS AND/OR SYSTEMS - The student will be able to:

- 12.01 Identify, classify and describe the function of pneumatic, hydraulic and electrical machines and components.
- 12.02 Construct flow diagrams and of pneumatic, hydraulic, and electromechanical systems.
- 12.03 Perform basic operation maintenance of pneumatic, hydraulic and electromechanical components, devices and/or machines.
- 12.04 Troubleshoot errors, faults, and inconsistencies of pneumatic, hydraulic and electromechanical components, machines and/or systems.
- 12.05 Define special applications of electromechanical, hydraulic and pneumatic machines and devices used process sheet metal, plastics, food and beverages, and other materials.
- 12.06 Describe important limitations of electromechanical, pneumatic and hydraulic machinery.
- 12.07 Operate independent pneumatic, hydraulic and electrical machines properly.
- 12.08 Describe the important operating parameters of pneumatic, hydraulic and electrical machines and systems.
- 12.09 Identify and use appropriate monitoring gages for pneumatic, hydraulic, and electromechanical machines and/or systems.

13.0 IDENTIFY AND IMPLEMENT LEAN CONCEPTS IN MANUFACTURING ENVIRONMENTS - The student will be able to:

- 13.01 Demonstrate product manufacturing requirements and processing flow.
- 13.02 Demonstrate the role of management in production operations.
- 13.03 Integrate personnel, hardware, and software capabilities for timely completion of products and product orders.
- 13.04 Apply manufacturing resources planning, just-in-time concepts to production and process planning.
- 13.05 Demonstrate good examples of lean manufacturing principles of pull production, perfect first-time quality, waste minimization, continuous improvement, flexibility, and building long lasting relationships with suppliers and customers.
- 13.06 Implement minimization of wastes in the form of waiting time, inventory, processing, motion, over-production, transportation, and scrap.
- 13.07 Apply the 5S's: Sort, Set in Order, Shine, Standardize, and Sustain.
- 13.08 Apply six sigma criteria correctly.

LIST PERFORMANCE STANDARD ADDRESSED: (Continued)

NUMBER(S):            TITLES(S):

15.0 TROUBLESHOOT INDUSTRIAL AUTOMATION SYSTEMS - The student will be able to:

- 15.01 Apply troubleshooting techniques to identify root cause, errors and faults of a problem.
- 15.02 Isolate systems for troubleshooting.
- 15.03 Develop a strategy for making system improvements based on troubleshooting activities.
- 15.04 Identify needed expertise to address the issue.
- 15.05 Participate in troubleshooting and resolution team effectively.



NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	SEMESTER CREDIT HOURS: <u>3</u>
COURSE PREFIX AND NUMBER: <u>ETM 2315</u>	

COURSE TITLE: Mechanical Devices and Systems

Section 2  
TYPE OF COURSE: (Click on the box to check all that apply)

AA Elective                       AS Required Professional Course                       College Prep  
 AS Professional Elective     AAS Required Professional Course                       Technical Certificate  
 Other \_\_\_\_\_  
 General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)  
INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

Communications                       Social & Behavioral Sciences                       Mathematics  
 Natural Sciences                       Humanities

Section 4  
INTELLECTUAL COMPETENCIES:

Reading     Speaking     Critical Analysis     Quantitative Skills                       Scientific Method of Inquiry  
 Writing     Listening     Information Literacy                       Ethical Judgment                       Working Collaboratively

Section 5	LEARNING OUTCOMES	METHOD OF ASSESSMENT
•	A student will be able to apply the basic principles relating to measurement devices in the manufacturing environment.	Hands-on exercises, written quizzes or tests.
•	A student will be able to apply the basic concepts relating to mechanical principles in the manufacturing environment.	Hands-on exercises, written quizzes or tests.
•	A student will be able to apply the basic principles relating to fluid power systems in the manufacturing environment.	Hands-on exercises, written quizzes or tests.
•	A student will be able to apply the basic principles relating to pumps and valves in the manufacturing environment.	Hands-on exercises, written quizzes or tests.
•	A student will be able to apply the basic principles relating to lubricants in the manufacturing environment.	Hands-on exercises, written quizzes or tests.
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Section 6  
Name of Person Completing This Form: Darrell J. High                      Date: 05/07/2008