



Syllabus

Nuclear Power Plant Components

ACADs (08-006) Covered

Keywords

Description

Supporting Material

Headquartered at Indian River State College | 3209 Virginia Avenue Fort Pierce, FL 34981 | 772-462-7172



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NET 112 – Nuclear Power Plant Components
Engineering Technologies and Engineering Transfer

Fall 2010

Catalog Course Description: This course is a study of basic nuclear power plant components including valves, sensors, detectors, controllers, pumps, heat exchangers, demineralizers, ion exchangers and other related systems.

Prerequisite(s):	MAT 110		
Corequisite(s):	None		
Credit Hours:	Credit Hours	Contact Hours	
	Lab	0.0	0.0
	Lecture	3.0	3.0
	Total	3.0	3.0

Departmental Website: <http://www.midlandstech.edu/engineering.htm>

WebCT Login Page: None

Instructor: Mr. David E. Butts
Office: LET 321 H
Telephone: **Office:** (803) 790-7833
Departmental Assistant: (803) 738-7787
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Campus Mailbox: LET 321
Personal Website: none

Class Schedule: Section B01: M/W 8:00AM – 9:25AM in LET 213
Section B61: T/Th 5:00PM – 6:25PM in EL 205

Office Hours: MTWTh 2:00PM – 4:00PM

Textbook(s): None (must print materials from Desire2Learn)

Additional Textbooks/Readings: none

Equipment: Scientific Calculator

Course Objectives: Upon completion of this course the student will be able to describe the basic construction, application, and operation of basic plant components.

Course Outcomes and Competencies:

Intended Course Outcome: The student will be able to evaluate and troubleshoot basic nuclear plant components as well as describe the basic construction, application, and operation of basic plant components.

Course Competencies:

1. Demonstrate a fundamental knowledge of the principles of fluid flow and lubrication, particularly in regard to the various types of pumps commonly employed in a nuclear power plant.
2. Demonstrate a fundamental knowledge of valves, valve operators, and valve positioning systems commonly employed in a nuclear power plant.
3. Demonstrate a fundamental knowledge of detectors commonly employed in a nuclear power plant.
4. Demonstrate a fundamental knowledge of filters and strainers commonly employed in a nuclear power plant.

Performance Measurement Instrument and Success criteria: Four exams, one for each competency, will be administered to students in the course. The success criterion is that 80% of the students will achieve a 75% or better on each exam.

Course Attendance: Students must attend at least 85% of scheduled lecture hours. For a 14-week course that meets twice a week, the student may not miss more than 4 lectures. Tardies count as 1/3rd of an absence. You are responsible for all material and announcements presented, whether you are present or absent.

Withdrawal: Should the maximum allowable absences be exceeded prior to midterm, a "W" will be submitted to the registrar to be recorded on the student's transcript. Should the maximum allowable absences be exceeded after midterm, a "W" will be submitted to the registrar if the student was passing the course at the time of withdrawal OR a "WF" will be submitted if the student was failing the course at the time of withdrawal.

Course Requirements: Administrative Requirements:

1. You are required to regularly access the course website on Desire2Learn.
2. You are required check your Desire2Learn email DAILY, including weekends.
3. **You are required to email the instructor via Desire2Learn by midnight one week after the first day of class. This counts as a quiz grade.** You are expected to familiarize yourself with the system on your own and seek help via D2L tech support or other students if needed. It is best to do this immediately—absolutely no exceptions will be made on account of technical glitches, unknown passwords, unfamiliarity with the system, student personal issues, etc. You have an entire week to overcome such obstacles.
4. You must download and print all materials on Desire2Learn, and this must be done on your own time. You MAY NOT print these materials on campus. **Any student caught printing course materials on any campus printer will lose 10 points on the next test or exam and will forfeit the option to exempt the final.**
5. Absences and tardiness are pardonable only with a *letterhead* medical excuse signed by a doctor. You must provide a copy of the excuse letter for me to keep, and it must include a telephone number for the medical facility so that I may verify the excuse. Any absence or tardy for which you cannot produce a valid, verifiable medical excuse will be counted against your attendance record.
6. The grade I (Incomplete) will be given only where justifiable by extenuating circumstances. The remaining course work must be completed within the next school term and must be done at the student's own initiative.
7. The student must make arrangements with the instructor for make-up tests and exams. This must be done within three days of the time of the test and within a day of an exam unless extended illness occurs. There are absolutely NO make-ups on quizzes.

Academic Requirements:

1. Reading materials are assigned via Desire2Learn and must be completed prior to class.
2. The student is responsible for all materials. Do not ask whether a topic contained in the D2L materials will be on the test—the answer is always YES. Flash cards are strongly recommended.
3. Quizzes will be short, random, and unannounced. They will cover any material from the current module through the previous lecture. There might be two in a row, or none for a month. There are absolutely no make-ups on quizzes under any circumstances. A missed quiz will be recorded as a grade of zero, but the lowest quiz grade is dropped.

Course Grading:

1. Quizzes 15% (Lowest quiz grade will be dropped)
2. Tests 65% (Lowest grade may be replaced with the final exam grade, if applicable)
3. Final Exam 20% (May be exempted if test average is at least 80)

Grading Scale:	90-100	A	Superior Work
	80-89	B	Good Work
	70-79	C	Average Work
	60-69	D	Below Average Work
	0-59	F	Unsatisfactory Work

Special Procedures: none

Field Trips: none

Classroom Rules/Other:

Code of Conduct:

Students are expected to conduct themselves in a professional manner, respectful of the rights for all students and instructors and to exhibit the highest level of ethical behavior. The following standards (in addition to those standards described in the current academic catalog) are considered the minimal standards for successful professional achievement:

1. All students shall receive equal, just and fair treatment regardless of race, gender, religion or age. Loud, abusive and disrespectful language in the classroom can result in dismissal from the classroom and a possible withdrawal from the course.
2. Sexual harassment is prohibited.
3. Cheating on quizzes, exams or scheduled classroom work that is defined as 'independent work' by the instructor is prohibited.
4. Smoking, eating or drinking or the use of tobacco products is prohibited in the classrooms and the laboratories.
5. Theft or unauthorized removal of equipment or supplies from a classroom or lab shall result in withdrawal from the course as well as legal action to resolve criminal conduct.
6. Illegal copying of software from classroom or laboratory computers is prohibited.
7. **Cellular telephones, cellular PDAs, and all other wireless communication devices WILL BE TURNED OFF BY THE START OF CLASS AND NOT TURNED BACK ON UNTIL THE END OF THE CLASS PERIOD. Any student who leaves the classroom to answer or make a phone call will be counted absent for that day and will not be readmitted to the classroom.**

Special Needs Students:

If special accommodations are needed for students with disabilities, the student should contact the Counseling Services Office for assistance. Documentation regarding a specific disability is

required for accommodation arrangements. Confidentiality of the information received will be maintained.

Campus Emergency Protocol:

Students and employees are asked to report safety concerns or suspicious activities to Campus Security at 7199(on campus), or 738-7199 (cell phone and off campus). In the event of an emergency, student and employee protocol is to immediately call Campus Security or local 911. If an emergency occurs, employees and students may seek additional information and instructions via MTC Information Centers, email, college Intranet, the MTC website, campus voice mail and loud speakers.

Course Topic Outline/Course Calendar:

Week and Topic	Gap Analysis	Slide #
1 Module 1 • Introduction to Secondary Systems • Centrifugal Pumps	1.3.1.10, 1.3.4 1.1.5.4.4, 1.3.1.3, 1.3.1.4, 2.1.2	2 3-48
2 Module 1 • Positive Displacement Pumps • Lubrication Principles	1.1.5.4.4, 1.3.1.3, 2.1.2 2.1.1	49-78 98-110
3 Module 1 • Net Positive Suction Head • Cavitation	1.3.1.5, 1.3.1.6 1.3.1.5, 1.3.1.6, 1.3.1.5, 1.3.1.7	117-122, 154 151-154
4 Module 1 Test Module 2 • Valve Types • Valve Packing	1.2.1.2.30, 1.3.1.11, 2.1.3 1.2.1.2.29	2-51 10, 17, 21, 37, 64
5 Module 2 • Water Hammer • Steam Traps	1.1.5.4.2, 1.1.5.4.4, 1.1.5.4.6 1.3.1.8, 1.3.1.9, 2.1.6	52-58
6 Module 2 • Valve Operators • Pneumatic Devices • Valve Control Schemes	1.1.5.4.2, 1.2.1.2.28, 1.3.9, 2.1.4 2.1.12.2 2.1.12.1	61-81 82-84, 88-89 82-94
7 Module 2 Test Module 3 • Detectors	1.3.8, 2.1.12.3	2-18
8 Module 3 • Detectors	1.3.8, 2.1.12.3	18-34
9 Module 3 • Detectors	1.3.8, 2.1.12.3	34-51
10 Module 3 Test Module 4 • Filters	1.3.1.8, 2.1.5	2-26, 33-36
11 Module 4 • Strainers	1.3.1.8, 2.1.5	27-32
12 Module 4 • Hangers	1.3.4.4	37-62
13 Module 4 • Snubbers Module 4 Test	1.3.4.4	63-68
14 Final Exam Review		

PLEASE NOTE: Should change become necessary, the instructor reserves the right to adjust the requirements, pace, or scheduling of this course. Any change will be announced in class before it becomes effective.