Instrumentation 1 (PTAC 1332 3A1)

CRN 11519 (Lecture) 11521 or 11522 (LAB)

CREDIT
3 Semester Credit Hours (3 hours lecture, 3 hours lab)

MODE OF INSTRUCTION
Face to Face

PREREQUISITE/CO-REQUISITE:
N/A

COURSE DESCRIPTION
Study of the instruments and controls systems used in the process industry including terminology, process variables, symbology, control loops, and basic troubleshooting.

COURSE OBJECTIVES
Upon completion of this course, the student will be able to:
- Explain the function of the various instruments used in the process industry;
- Diagram the process control elements in a control loop;
- Utilize terms and symbols in instrumentation;
- Interpret process flow diagram and piping and instrumentation drawing

INSTRUCTOR CONTACT INFORMATION

Instructor:	Dr. Liam Sheppard
Email:	lsheppard1@lit.edu
Office Phone:	(409) 245-8758
Office Location:	ExxonMobil PATC building, room 207
Office Hours:	Monday/Wednesday 4:00-5:30 PM; Tuesday/Thursday 2:00-3:00 PM; Friday 8:00 AM to 10:30 AM

REQUIRED TEXTBOOK AND MATERIALS
Process Instrumentation, 2nd Edition; Pearson 2020 ISBN: 978-0-13-521392-6

Lab personal protective equipment, long pants, closed toe shoes (no sandals, crocs, or flipflops in the lab) shirt with sleeves (no tank tops or muscle shirts).

ATTENDANCE POLICY
Missing more than 20% of classes will result in an automatic "F" for the course.

Absences are counted as unexcused or excused.

Missing more than 20% of a class period will count as an absence.

Being tardy 2 times equals 1 absence.

DROP POLICY
If you wish to drop a course, you are responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

COURSE CALENDAR

DATE	TOPIC	READINGS (Due on this Date)	ASSIGNMENTS (Due on this Date)
Module 1 1-21	Introduction, syllabus, expectations		
Module 2 1-26	Pressure	Chapter 1 - 2	Pressure Conversion WS
1-28	Temperature	Chapter 3	Temperature Conv. WS
Module 3 2-2	**TEST #1: Chapters 1-3**		
2-4	Level	Chapter 4	Head Pressure WS
Module 4 2-9	Flow	Chapter 5	
2-11	Analytic	Chapter 6	
Module 5 2-16	**TEST #2: Chapters 4-6**		
2-18	Process Diagrams & Symbols	Chapter 7	
Module 6 2-23	Switches, Relays & Alarms	Chapter 8	
2-25	Signal Transmission & Conversion	Chapter 9	Scaling WS
Module 7 3-2	**Test #3: Chapter 7-9**		
3-4	Simple Loop Theory	Chapter 10	Loop Element WS

3-9	Spring Break		
3-11	Spring Break		
Module 8 3-16	Primary Sensor, Transmitter & Transducers	Chapter 11	
3-18	Controllers & Final Control Elements	Chapter 12	
Module 9 3-23	Control Valves & Regulators	Chapter 13	
Module 10 3-25	**Test #4: Chapter 10-13**		
3-30	Controllers	Chapter 14	
Module 11 4-1	Control Schemes	Chapter 15	
Module 12 4-6	Advanced Control Schemes	Chapter 16	
4-8	ESD, Interlocks & Protective Devices	Chapter 21	
Module 13 4-13	**Test #5: Chapter 14-16, 21**		
4-15	P&ID Review		
4-20	P&ID Review		
4-22	P&ID Review		
4-27	P&ID Review		
5-7—5-13	Lab Final		
Exam Week	Lecture Final (Comprehensive)		

Calendar subject to change due to unforeseen circumstances.

COURSE GRADING
Final grades will be calculated according to the following criteria:

Attendance/HW   5%

Lab   15%

Tests: 40%

Final Exam: 40%

GRADE SCALE

- 90-100   A
- 80-89   B
- 70-79   C
- 60-69   D
- 0-59   F

Late work will be reduced by 10 points per calendar day late.

TECHNICAL REQUIREMENTS
The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at https://lit.edu/online-learning/online-learning-minimum-computer-requirements. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

DISABILITIES STATEMENT
The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. You may also visit the online resource at Special Populations - Lamar Institute of Technology (lit.edu).

STUDENT CODE OF CONDUCT STATEMENT
It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

ARTIFICIAL INTELLIGENCE STATEMENT
Lamar Institute of Technology (LIT) recognizes the recent advances in Artificial Intelligence (AI), such as ChatGPT, have changed the landscape of many career disciplines and will impact many students in and out of the classroom. To prepare students for their selected careers, LIT desires to guide students in the ethical use of these technologies and incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the discretion of the instructor. Students are reminded that all submitted work must be their own original work unless otherwise specified. Students should contact their instructor with any questions as to the acceptable use of AI/ChatGPT in their courses

STARFISH
LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

ADDITIONAL COURSE POLICIES/INFORMATION

Lab Safety
Lab safety is a priority, if you have an accident or injury, report it to the Instructor immediately.