Course Title: Process Pipe Design Drafting

Course Number: Design Drafting 211

Course Credit: 3 Semester Hours

Meeting Time: 1:00 - 2:50pm, Monday and Tuesday

Class Location: Lecture and Lab will meet in Room 220 Anzalone Hall

Course Description:
Piping design and drafting fundamentals as used in the process industries such as refineries and petrochemical plants. The study, use and drafting of pipes, fittings, flanges, valves, equipment and structural systems using the latest industry-standard software. Students will use industry standards to create schematic, plan, elevation, isometric, spool and 3-D drawings of various process piping components/systems.


Course Requirements: The student should:
1. read assigned sections in the text and be prepared for class.
2. attend class, arrive on time and sit in designated seat.
3. become involved in the class and participate in discussions.
4. devote necessary time to complete assigned work
5. complete all work in a professional manner.
6. be prepared for unannounced quizzes.
7. adequately study for tests and the final exam.
8. provide the required drafting equipment.
9. keep back-up copies of all assignments on Net Storage
10. follow lab rules & guidelines

Special Provisions:
If you are a qualified student with a disability seeking accommodations under the Americans with Disabilities Act, you are required to self-identify with the Office of Disability Services, Room 203, Student Union. No accommodations will be granted without documentation from the office of Disability Services.
Attendance Policy:
This class is important and your presence for the entire class is essential. The classes are 1 hour and 50 minutes long and you are expected to be present the entire time. Attendance will be taken daily, and you will be marked absent if not in full attendance. Excessive absence will have a serious negative impact on your grade! If you miss more than 10% of classes (3 unexcused absences) you will not be allowed to submit any extra credit assignments! You are responsible for dropping this class, if you so desire -- you will not be automatically dropped for not attending class!

Policy on Make-Up Work:
A student with an unexcused absence may not make up work missed. A grade of zero will be recorded for work missed during the absence period. A student with an excused absence has one (1) week after returning to class to make-up work missed and earn full credit.

Classroom Decorum:
Please do not walk in and out of the class during lectures. If you arrive late, enter by the rear door and be seated as discreetly as possible. Free discussion, inquiry and expression is encouraged in this class. The experiences of all students can be beneficial if they can be intertwined within the course content. However, classroom behavior that interferes with either a) the instructor's ability to conduct the class or b) the ability of students to benefit from the instruction is not acceptable. Examples my include: routinely entering class late or leaving early; use of pagers, cellular telephones or other electronic devices; repeatedly talking in class without being recognized; talking while others are speaking; or arguing in a way that is perceived as “crossing the civility line.” The classroom is not a place for children, therefore do not bring them to class with you.

CAD Applications Lab Computer Use Guidelines
1. Back up your work often
2. Label and remove your flash drive/diskette
3. Clean the desk and your work area before your leave.
4. DO NOT save anything to the hard drive or desktop, it will be automatically deleted.
5. DO NOT reconfigure the computer settings (screen savers, etc.)
6. Use plot preview before printing
7. DO NOT “surf” inappropriate internet sites
8. Downloading of music, games, software, etc. is strictly prohibited
9. Plot Power Point presentations 6 per page – not full size
10. Do not turn off computers, except at the end of the day.
11. Return everything to its proper place
12. Report broken or damaged equipment immediately.
13. At the log-in screen, press enter (DO NOT change user name)
Class Work:
You will not be able to complete all assigned work during class time. You should plan to spend 1-1½ hours outside of class for each hour of class. I caution each of you not to “fall behind schedule” on your drawings; it is imperative that drawings be submitted on time –no extensions! Late work will have one letter grade deducted for each class that the work is late.

The work stations in the rear of the drafting lab in room 220 is open for your use any time. Please be considerate of your fellow students if a class is meeting. The Tech Fee drafting lab in room 216 Anzalone is open approximately 20 hours per week (consult the schedule on the door for open hours).

Academic Honesty:
Students are expected to maintain the highest standards of academic honesty. Behavior that violates these standards are not acceptable. Cheating on or communicating with other students during examinations, plagiarism, improper acknowledgment of sources in essays, attempting to benefit from the work of other students, or the use of a single essay or paper in more than one course without permission are considered very serious offenses and shall be grounds for disciplinary action as outlined in the current General Catalog.

Evaluation & Assessment:
The final letter-grade you receive in this course is my verification or assessment of the degree of functional mastery you have achieved.

Your Job
Demonstrate (to me) that you have a functional mastery of the facts and concepts of this course by actively participating in class discussions and activities; asking and answering questions asked of you; being prepared for class; completing all assignments on time in a professional manner; studying for and doing well on all quizzes, tests and assignments.

My Job
To provide you opportunities to demonstrate your functional mastery of the facts and concepts contained in this course, and based on your performance, assess your level of mastery.

It is my responsibility to: organize and present the material in ways that effectively communicate the facts and concepts, answer your questions (in and out of class), be available to clarify points of confusion and to challenge you, so you can stretch you limits of learning.

A - Demonstrated mastery of all the course concepts and information
B - Demonstrate mastery of most of the concepts and information
C - Demonstrated minimal mastery of concepts and key information
D - Demonstrated somewhat unacceptable level of mastery
F - Completely failed to demonstrate a grasp of the main course concepts and information.
Departmental Grading Scale:

93% - 100% = A
85% - 92% = B
77% - 84% = C
69% - 76% = D
Below 69% = F

Equipment Provided by the Student:

1. Mechanical pencil(s)
2. Jump Drive
3. Notebook
4. Template
5. Folder to store drawings/worksheets
6. Square grid graph paper

Important Dates:

August 20 .......... First day of class
September 1 ....... Labor Day Holiday
October 2-3 ....... Fall Break
October 24 ........ Last day to withdraw or resign
November 3-14 ... Advising for Priority Registration
November 17-21 ... Priority Registration - Spring 2009
November 18-22 ... NAIT Conference
November 26-28 ... Thanksgiving Holiday
December 5 ... Last Day of class

Course Outline:

1. Introduction
2. Overview of pipe drafting/design
3. Steel pipe
4. Pipe fittings
5. Flange basics
6. Valves
7. Mechanical equipment
8. Flow diagrams
9. Instrumentation
10. Codes & specifications
11. Equipment layout
12. Pipe arrangement drawings
13. Sections & elevations
14. Piping details
15. Piping systems
16. Piping isometrics
Knowledge Base:
- Pipe Fabrication, Layout and Offsets, Robert Tinsley, Robert Tinsley Handbook
- Piping Design Handbook, John McKetta, 1992, Marcel Dekker
- Piping Design for Process Plants, Howard F Rase, John Wiley & Sons Publishers
- Pipe Fabrication, Layout and Offsets, Robert Tinsley, Robert Tinsley Handbook
- The Piping Guide: for the design and drafting of industrial piping systems, David R Sherwood & Dennis Whistance, 2000, Syentek Inc.
- Process Pipe Drafting, Terrance M Shumaker, Goodheart-Wilcox Publishers
- Process Piping Drafting, Rip Weaver, Gulf Publishing

Course Competencies: The student will be able to:
1. Understand and converse in appropriate technical terminology.
2. Recognize, interpret and draw the components associated with process pipe drafting.
3. Apply industry accepted standards and current practices to process pipe drafting problems.
4. Develop process pipe drafting skills and visualization.
5. Work individually and collectively to solve process pipe design and drafting problems.
6. Use generally accepted practices to route, support pipe.
7. Identify basic process equipment, pipe, valves, and fittings from either photographs, drawings or generally accepted 2D and 3D symbols and identifies their nozzles and other points of connection and attachment.
8. Trace out, sketch and correctly identify process lines on a P&ID and on a corresponding 2D or 3D representation (Piping Isometrics, Plans, Sections, Renderings) and verify their correctness.
9. Identify and list the proper materials for a given piping specification.
10. Identify situations requiring the application of publicly available piping design standards, including ASME B31.3, B31.1 and API 1104.
11. Design pipe appropriately for common fabrication and erection methods.
12. Design pipe to accommodate inspection and maintenance practices.
13. Use a Computer Aided Design (CAD) system to correctly represent a schematic and dimensioned piping drawings and backup file appropriately.

(Competencies 6-13 taken from Society of Pipe Engineers & Designers Level 1 PPD Certification Requirements)