Syllabus – ME 3131 Thermal-Fluids Laboratory

Instructor Information

Name: Prof. Yitong Zhao, Ph.D
Office Location: 17-2117
Office Hours: Mo 12:30-2:30pm, We 8:45-9:45am, Fr 8:45-9:45am in office. (Other time by appointment)
Phone: 909-979-5263
Email: yitongzhao@cpp.edu

Course Information

Class Information
Time: We 12:00-2:50 pm
Location: 17-1468

Catalog Description
1) HVAC experiment
2) Pipe Friction experiment
3) Linear Momentum experiment
4) Benchtop flow Measurement
5) Centrifugal Pump experiment
6) Pump-Pipe System Design Lab
7) Pelton Wheel Turbine
8) Newtonian Fluid Viscosity

Prerequisites
Pre: C- or better in GE/A2
Co: ME 3121

Course Learning Objectives
• Help understand concepts in Thermo-Fluid
• Train the ability to perform an engineering experiment
• Train formal report writing skill and team work

Course Materials

Required Materials
The Lab Manual for this course is available on Blackboard under ‘Course Materials’.
Students’ Obligations

Regarding to Lab and Report
You must follow all safety guidelines in the Lab Manual when working in the fluid mechanics lab.

Students should read the Lab Manual thoroughly and do the necessary background reading before coming to class. There will be a prep quiz at the beginning of each experiment session. Bring the Lab Manual to each session.

All eight lab-reports must be written in the Memorandum Report Format, which is included in the Lab Manual. All reports will be written by the entire group (i.e. one report per group per experiment). Group members will rotate among the following four jobs: (1) “Group Leader” who is responsible for organizing and writing the majority of the report including the 1-2 page summary (purpose of experiment, description of equipment, experimental procedures, explanation of how data was reduced, and results); (2) “Data Collector” who is responsible for preparation of the data sheet and recording raw data during experiments; (3) “Data Organizer” who is responsible for the creation of graphs and tables of the results, and writes related sample calculations; (4) “Drafter” who is responsible for the creation of equipment schematics. All other tasks required for the preparation of the report are assigned by the Group Leader.

For all experiments, the data sheet must be presented to the instructor for his/her signature BEFORE leaving the lab.

If there is any concern regarding to the grading of the report, it must be brought to the instructor’s attention within 3 days after the report is graded and returned to the students.

Minimum Technical Skills
You are expected to have basic computer knowledge including, but not limited to:

- Using email and attachments
- Using Blackboard to get class materials and to get informed of the course notification.

Getting Help
If you are having trouble understanding concepts, it is your responsibility to seek help by contacting the instructor.

If you are having difficulties with using Blackboard-specific tools or features, refer to the Blackboard eHelp page. More complicated Blackboard inquires can be directed to the IT Service Desk. Both links to the Blackboard eHelp page and IT Service Desk can be found under the “Technical Support” section located on the left navigation menu of this course.

Grading
Prep Quizzes (Closed book): 12%, 1.5% each;
Group lab reports (8): 80%, 10% each;
Attendance (Must attend experiment session): 4%
Attendance of VR post lab exercise: 4%

Approximate Grading Scale
90 – 100%   A
80 – 89 %    B
70 – 79 %    C
60 – 69 %    D
below 60%    F

Students must attend all lab sessions on time unless a medical or family emergency occurs. In the event that a student is late or absent, proof of the emergency must be presented to the instructor. Additionally, it is expected that the student will call or email the instructor and fellow group members if he or she will be late or absent to class. Unauthorized absences will result in the following penalties on your overall course score:

Late (5-30 min),  
1st offense – warning  
2nd offense – 10% off next lab report  
3rd offense – 25% off next lab report  
4th+ offense – 50% off next lab report

Absent (>30 min),  
1st offense – 50% off next lab report  
2nd offense – 100% off next lab report  
3rd offense – failure of course

No make-up labs will be given.

Late Submissions
If report is turned within 24 hours after the deadline, 50% of the grade will be deducted. If the report is turned in more than 24 hours after the deadline, no grade will be given.

Course Policies

Academic Integrity
All of the work completed in this course is expected to be your own. Plagiarism or cheating will not be tolerated in this course. For more information, visit the Academic Integrity Policies page: http://www.cpp.edu/~judicialaffairs/academic-integrity-resources/academic-integrity.shtml

Netiquette
Netiquette refers to the behavior that you are expected to follow when communicating online. It covers both common courtesy in an online environment and the informal ground “rules” for navigating in cyberspace. For this course, you are asked to follow these basic guidelines:

• When writing an email to your instructor, include the class name and section, along with a description, in the subject line. For example: COM 206.01 RE: Design Project.
• Use a signature with your full name at the end of your emails.
• Remember that slang can be misunderstood or misinterpreted – use your “academic” voice. pls dnt use txt lang when sending messages 2 me.
• Be aware of your tone and avoid sentences typed in all caps – it implies online “screaming” or “shouting.”
• Do not send angry messages known as “flaming.”
• Do not use offensive language.
• Be sensitive to those with cultural and/or linguistic backgrounds, as well as different political and religious beliefs.
• Respect different views and opinions.
• Provide constructive feedback and use good judgment when composing responses to your classmates.
• Be professional and use good grammar and spelling. Consider writing your discussion posts, assignments, and online correspondence in a text editor to check for spelling and grammar before pasting it into an online submission.
### Tentative Course Schedule (Subject to change)

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Assignment</th>
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| 1    | • Introduction to the Fluid Mechanics Laboratory  
• Form group; Review important topics including report format;  
• Briefing for Centrifugal Pump experiment. | • Watch safety video  
• Watch 360 Lab Introduction  
• Watch Centrifugal Pump procedures video, read lab manual to get familiar with lab requirement. |
| 2    | • Turn in proof of your pre/co-req attainment;  
• Sign safety form;  
• Prep quiz for Centrifugal Pump experiment  
• Conduct Centrifugal experiment. | • Centrifugal Pump report assigned, draft due hard copy in a week at the beginning of lab meeting;  
• Conduct Virtual Lab for Centrifugal Pump within two weeks. |
| 3    | • Briefing for (1) HVAC; (2) Pipe Friction; (3) Linear Momentum; (4) Benchtop Flow Measurement;  
• Discussion of Centrifugal Pump lab report;  
• Conduct Virtual Lab for Centrifugal Pump (If you are not able to make it during the week) | • Centrifugal Pump report final report due in a week (hard copy)  
• Watch corresponding lab procedure for next week. |
| 4    | • Prep quiz for corresponding lab  
• Each group works on one of the four lab experiments: HVAC, Pipe Friction, Linear Momentum, Benchtop Flow Measurement experiment | • Watch corresponding lab procedure for next week  
• The corresponding lab report will be due in two weeks (hard copy); |
| 5    | • Prep quiz for corresponding lab  
• Each group works on one of the four lab experiments: HVAC, Pipe Friction, Linear Momentum, Benchtop Flow Measurement experiment | • Watch corresponding lab procedure for next week  
• The corresponding lab report will be due in two weeks (hard copy) |
<table>
<thead>
<tr>
<th>Date</th>
<th>Prep quiz for corresponding lab</th>
<th>Each group works on one of the four lab experiments: HVAC, Pipe Friction, Linear Momentum, Benchtop Flow Measurement experiment</th>
<th>Watch corresponding lab procedure for next week</th>
<th>The corresponding lab report will be due in two weeks (hard copy)</th>
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<tbody>
<tr>
<td>6</td>
<td>Prep quiz for corresponding lab</td>
<td>Each group works on one of the four lab experiments: HVAC, Pipe Friction, Linear Momentum, Benchtop Flow Measurement experiment</td>
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<td>7</td>
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<td>Prep quiz for corresponding lab Each group works on one of the four lab experiments: HVAC, Pipe Friction, Linear Momentum, Benchtop Flow Measurement experiment</td>
<td>The corresponding lab report will be due in two weeks (hard copy)</td>
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<td>8</td>
<td>Briefing (1) Viscosity experiment (2) Pump Pipe Design experiment and (3) Pelton Turbine experiment</td>
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<td>Watch viscosity lab procedure for next week</td>
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<td>9</td>
<td>Conduct Viscosity experiment (rotate groups) Conduct Pump Pipe Design experiment</td>
<td>Viscosity and pump-pipe design lab report will be due in three weeks (hard copy)</td>
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<td>10</td>
<td>Conduct Viscosity experiment in case not all groups finish in the previous week</td>
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<td>Conduct Pelton Wheel Turbine experiment</td>
<td>Pelton Wheel Turbine lab report will be due in two weeks (hard copy)</td>
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<td>11</td>
<td>Conduct Pelton Wheel Turbine experiment</td>
<td>Pelton Wheel Turbine lab report will be due in two weeks (hard copy)</td>
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<td>No Meeting</td>
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