

# **SAMPLE ASSESSMENT REPORT**

**ROY G. PERRY COLLEGE OF ENGINEERING  
CHEMICAL ENGINEERING DEPARTMENT  
PRAIRIE VIEW A&M UNIVERSITY**

**ASSESSMENT REPORT COVER PAGE**

**CHEG 3023 UNIT OPERATIONS**

**FALL 2020 SEMESTER**

**NAME OF INSTRUCTOR: Dr. Nabila Shamim**

*Revised: 12/12/2020*

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(Outcome 7)
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**Detailed Course Syllabus**  
**(Distributed to Students at the beginning of the Semester)**  
**ABET Outcomes measured using course should be**  
**explicitly listed in the syllabus**



CHEG 3023-Y02: Unit Operations  
Fall 2020 Syllabus

General Course Information

| Information Item               | Information                                                                                                                                                                                                                                                                            |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Instructor:</b>             | Dr. Nabila Shamim, Ph.D.                                                                                                                                                                                                                                                               |
| <b>Section # and CRN:</b>      | Y02 CRN: 16916                                                                                                                                                                                                                                                                         |
| <b>Office Location:</b>        | C.L. Wilson 201G                                                                                                                                                                                                                                                                       |
| <b>Office Phone:</b>           | 936-261-9410                                                                                                                                                                                                                                                                           |
| <b>Email Address:</b>          | nashamim@pvamu.edu                                                                                                                                                                                                                                                                     |
| <b>Office Hours:</b>           | 12:00 pm. –1:00 p.m. TR, 9:00 a.m. – 11:a.m.Monday Virtual Via zoom                                                                                                                                                                                                                    |
| <b>Mode of Instruction:</b>    | Hybrid/Blended                                                                                                                                                                                                                                                                         |
| <b>Course Location:</b>        | Gilchrist Engineering Bldg 104                                                                                                                                                                                                                                                         |
| <b>Class Days &amp; Times:</b> | TR 4:30 pm - 5:50 pm                                                                                                                                                                                                                                                                   |
| <b>Catalog Description:</b>    | <b>(3-0) Credit 3 semester hours.</b> Fluid statics and its applications, fluid flow phenomena, basic equations of flow, hydraulic losses, incompressible flow in pipes and channels, flow of compressible fluids, flow past immersed objects, transportation, and metering of fluids. |
| <b>Prerequisites:</b>          | CHEG 2053 Materials and Energy Balances                                                                                                                                                                                                                                                |
| <b>Co-requisites:</b>          |                                                                                                                                                                                                                                                                                        |
| <b>Required Text(s):</b>       | Unit Operations of Chemical Engineers. 7th Edition, McCabe, Smith and Harriott, McGraw-Hill, 2005 ISBN: 9780073104454                                                                                                                                                                  |
| <b>Recommended Text(s):</b>    | Fluid Mechanics for Chemical Engineers. 3rd edition, N. de Nevers, McGraw-Hill, 2005, ISBN: 978-0-07-256608-6                                                                                                                                                                          |

General Course Information Table

**Student Learning Outcomes:** The course is designed to give undergraduate student a fundamental grasp of the fluid flow phenomena, fluid flow equipment and some interphase contacting devices. This course serves to integrate the fundamental fluid flow concepts with practical chemical engineering problems and industrial applications. Key objectives of this course are to enhance problem identification, formulation and problem solving skills of the student, and to improve the student's ability to make calculations and obtain correct final answers.

| Upon successful completion of this course, students will be able to:                                                                                                                                                                                                                                                                                                                    | Program Learning Outcome Alignment | Core Curriculum Outcome Alignment |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------|
| <b>1. Conduct experiment while maintaining all safety precautions.</b> <ul style="list-style-type: none"><li>- Record the reading of the water level using the manometer</li><li>- Record the meniscus measurement for the incline tube Recognize use inclined tube manometer to collect data</li><li>- Follow safety procedures</li></ul>                                              | 6.2                                |                                   |
| <b>2. Analyze and interpret experimental data</b> <ul style="list-style-type: none"><li>- Calculate the volumetric flow rate stating all assumptions made during the calculation</li><li>- Calculate the velocities for each set of reading using the given dimensions.</li><li>- For each orientation and flow type, calculate the total head using the Bernoulli's equation</li></ul> | 6.3                                |                                   |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--|
| Summarize data in a table and present them in a graph<br>Label the graphs so that the different heads are clearly identifiable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |  |
| <b>3. Demonstrate the use of engineering judgement to draw conclusions.</b> <ul style="list-style-type: none"> <li>- possible reasons are there for the differences between the calculated total head and the measured total head</li> <li>- <b>reliability of collected data</b></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 6.4 |  |
| <b>4. Acquire new knowledge using the appropriate learning strategies</b> <ul style="list-style-type: none"> <li>- Given an open ended problem, students are aware of the need and are able to independently acquire additional knowledge</li> <li>- Inquisitive studies on the problem and acquire knowledge and data for solving the problem</li> <li>- Gather information on relevant fundamentals, theory / concept (demonstrate technical competence) and relate them to the assignment/project.</li> <li>- Effectively use the library and online resources for research, read magazines, journals, and other print or online materials so as to be aware of current developments in the discipline; and provide and properly site the sources in a list of references in the literature review section and other relevant sections of the report.</li> <li>- Submit a complete report based on open project</li> </ul> | 7.1 |  |

**Student Learning Outcomes Table**

#### **ABET OUTCOMES:**

Two major course outcomes will be assessed in this course using a number of performance criteria. The Course outcomes and their performance criteria are detailed below:

#### **STUDENT OUTCOME 6: an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions**

##### **Outcome 6.2 . Ability to conduct experiments**

Demonstrate ability to perform quantitative physical measurements, operate, laboratory scale equipment.

- (i) Ability to Understand unit operation problems as turbulent or laminar.
- (ii) Ability to classify unit operation problems as static or dynamic.
- (iii) Ability to conduct experiments related to unit operation as measuring flow, pressure, temperature.

##### **Outcome 6.3. Ability to analyze and interpret experimental data**

- (iv) Ability to carefully record experimental data .
- (v) Ability to analyze collected experimental data and represent them in the form of table and figures
- (vi) Ability to demonstrate the problems faced and suggestions for best solution.

##### **Outcome 6.4 Demonstrate the use of engineering judgement to draw conclusions.**

- (i) Convincingly describes what has been learned in the project

#### **STUDENT OUTCOME 7: an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.**

Recognition of the need for, and an ability to engage in life-long learning

##### **1. Acquire new knowledge using the appropriate learning strategies.**

Given a problem, the student is able to:

- (i) Ability to prepare a written report of based on research analysis.
- (ii) Ability to present research analysis clearly.
- (iii) Ability to present analysis results thoroughly to a group within a time frame.

##### **2. Ability to perform research analysis on chemical engineering unit operations.**

Given a problem, the student is able to:

- (i) Ability to use search engines and databases.
- (ii) Ability to use journal articles and book to gather information.
- (iii) Ability to conduct interviews to gather information.
- (iv) Ability to use multiple source types to gather information.
- (v) Ability to utilize the library for resources

| Course Grade Requirement                   | Weight%  | Total      |
|--------------------------------------------|----------|------------|
| 1. Assignments and Online Quiz (5 or more) | 15%      | 15%        |
| 2. Discussion Board Posts (4)              | 5%       | 5%         |
| 3. Midterm Exams (2)                       | 18% each | 36%        |
| 4. Laboratory Experiment (3)               | 8% each  | 24%        |
| 5. Final Project                           | 20%      | 20%        |
| 6. Final Project Presentation              |          |            |
| <b>Total:</b>                              |          | <b>100</b> |

#### Grading Criteria and Conversion:

A = 90 and up

B = 80 -89

C = 70 - 79

D = 60 - 69

F = 59 or below

*A signifies that the student has mastered the subject matter and understands all concepts covered.*

*B signifies that the student has a good understanding of the subject matter with few exceptions.*

*C signifies that the student has an adequate understanding of the material and can follow most concepts.*

*D signifies that the student does not understand important class concepts needed to be successful in future courses.*

*F signifies that the student has missed significant assignments or does not understand several concepts.*

#### Detailed Description of Major Assignments:

| Assignment Title or Grade Requirement  | Description                                                                                                                                                                                                                      |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Homework Assignments<br>Online Quiz | The purpose of the homework is to aid in learning the material. Because of the tight timeline, late homework will not be accepted. The online quiz assignments designed to supplement and reinforce course material              |
| 2. Midterm Exam                        | The two tests designed to measure knowledge of presented course material covered during the first half and second half of the semester.                                                                                          |
| 3. Discussion Board Posts              | Students will have opportunity to interact with the instructor and peer. Read at least one of your peer's posts and point out at least one and least one recommendation to enhance that interaction.                             |
| 4. Projects                            | focused on concepts within the course, are important in training student skills and for the student to acquire a professional approach to the subject                                                                            |
| 5. Experimental laboratories           | Demonstrates knowledge of how the equipment functions, their limitations and uncertainties in the data. Collects and records data using appropriate units of measurement in very well organized and easily interpretable manner. |

#### Course Procedures or Additional Instructor Policies

## **Taskstream**

Taskstream is a tool that Prairie View A&M University uses for assessment purposes. One of your assignments may be required to be submitted as an "artifact," an item of coursework that serves as evidence that course objectives are met. If applicable, more information will be provided during the semester by your department, but for general information, you can visit Taskstream via the link in eCourses.

Students have two weeks to contest any grade. Matters unresolved between the student and instructor must be brought before the department head within 2 weeks of the student meeting with the instructor.

## **TESTS & TESTING POLICY**

All tests are closed book. No exams will be dropped.

Make-up exams are only available for students with university excused absences. In most cases, the make-up exam is given BEFORE the student misses the exam.

No electronic device will be allowed including iPads and eReaders.

No graphing calculators are allowed for any test or quiz. Students must purchase a small scientific calculator to use on exams. A cell phone cannot be used as a replacement for a graphing calculator on an exam.

No bathroom breaks are allowed during a test or a quiz. If a student leaves the test area during this time, their exam/quiz will be collected and considered finished by the student.

Any act of cheating will result in a grade of zero for that student, and the student will be referred to the department head. Such meetings must take place within a week of the violation

## **QUIZZES**

Quizzes will be given throughout the semester. Quizzes will be based on material covered in class and homework assignments.

Quizzes will be scheduled at a given time by the instructor.

Quizzes will last maximum about 20 minutes

No graphing calculators are allowed for any test or quiz.

## **Assignment POLICY & GUIDELINES**

Practice problems have been provided for students on the tentative lecture schedule. These problems are for your independent practice and not for weekly submission.

Specific assignments will be given throughout the semester as the instructor examines the specific need of the class.

Students must submit these assignments during a given time frame. No late or replacement assignments will be accepted.

If a student chooses to disobey the university's honor code and copy the solution manual instead of submitting the student's own independent work, the student will receive a grade of zero on the assignment and will be referred to the department head. Such meetings must take place within a week of the infraction.

All submitted assignments must be submitted on white paper.

Write only on the front of the paper

Write your name, date, and assignment number on the front page.

Number your pages! From time-to-time, students staple the pages out of order.

Homework is due in canvas. Late homework assignments will NOT be accepted!

## **CLASS ACTIVITIES AND PARTICIPATION GRADES**

Class activities/e-discussions will often occur during the semester.

These activities may be computer based or involve the textbook.

As instructed Students will submit these assignments during a given time frame.

## **BOOK POLICY**

The textbook for this course is REQUIRED. Students without textbooks will eventually fail the course; Books can be purchased through the bookstore or online.

## **FINAL EXAM PROCEDURES**

The comprehensive final exam will be closed book.

All students are required to take the final exam. No exemptions are given.

It is the student's responsibility to take the exam on time and upload the test in canvas in the given time frame

Any act of cheating will result in a grade of zero for that student, and the student will be referred to the department head. Such meetings must take place within a week of the violation

## **CLASSROOM CONDUCT**

Students are expected to attend class on a regular basis and are expected to participate in discussions. Students will conduct themselves in a manner that is always respectful to their fellow classmates and the instructor .

Cell phones MUST be turned off and stored during class time.

Students will arrive to class prepared to discuss and participate in the lesson. NOTICE: Class participation is added to the course grade.

Students should dress appropriately for class.

Students who disrupt class will be asked to leave. No sleeping allowed!

No headphones are allowed during class including quizzes and exams.

NOTICE: Class participation is a part of your grade.

## **Attendance Policy**

Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class.

## Hybrid Course Schedule

Heat Mass and Momentum Transport CHEG 3023  
Fall 2020

| Modules                                                                        | Topic                                                        | Assignment/Activity (Online)                                                                                                                                                                                                                                                                                                                             | Assignment/Activity (Face-to-Face[F2F])                                     | Due Date                                 |
|--------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------|
| <b>Introduction Module:</b><br>[Week 1<br>Aug 25 2020]                         | Course Introduction                                          | <ul style="list-style-type: none"> <li>Read the syllabus</li> <li>Complete the syllabus quiz- Participation credit</li> </ul>                                                                                                                                                                                                                            |                                                                             |                                          |
| <b>Module 1:</b><br>[Week 1<br>Aug 27 2020]                                    | <b>Chapter 1:</b><br>Definitions and Principles              | <ul style="list-style-type: none"> <li>Read Chapter 1</li> <li>McCabe Smith Pages 3-20</li> <li>Participate in review</li> </ul>                                                                                                                                                                                                                         |                                                                             | [ <b>Quiz</b> : Aug 27 2020 by 11:59 PM] |
| <b>Module 2:</b><br>[Week 2<br>Sep 1 2020 and Sep 3 2020]                      | <b>Chapter 2</b><br>Fluid Statics and Its Applications)      | <ul style="list-style-type: none"> <li>View lecture Notes in</li> <li>Read chapter 2 Pages 31- 41</li> <li>In class activity to calculate static pressure and pressure drop using nanometer).</li> <li><b>Quiz 1 on manometer</b></li> </ul>                                                                                                             |                                                                             | [ <b>Quiz 1</b> : Sep 4 2020, 11: 59 PM] |
| <b>Module 3:</b><br>[Week 3<br>Sep 8 2020 and Sep 10 2020]                     | <b>Chapter 3</b><br>Fluid Flow Phenomena (week 3)            | <ul style="list-style-type: none"> <li>View lecture Notes in e-course</li> <li>Read chapter 3 Pages 45-65</li> <li>In class activity to calculate viscosity and describe types of flow (not graded).</li> <li>Read Project description and form group</li> <li>Watch video on Non-Newtonical fluid</li> <li><b>Complete Quiz 2 Fluid Flow</b></li> </ul> |                                                                             | [ <b>Quiz 2</b> : Sep 11 2020 11:59 PM]  |
| <b>Module 4:</b><br>[Week 4<br>Sep 15 2020 and Sep 17 2020]                    | <b>Chapter 4</b><br>Basic Equations of Fluid Flow Week 4     | <ul style="list-style-type: none"> <li>Read chapter 4</li> <li>View lecture notes</li> <li>Pages 61-64</li> <li><b>Experimental Lab 1</b></li> <li><b>Final Project given</b></li> </ul>                                                                                                                                                                 | <ul style="list-style-type: none"> <li><b>Experimental Lab 1</b></li> </ul> |                                          |
| <b>Module 6:</b><br><b>F2F Meeting</b> on [Week 6 Sep 29 2020 12:30 – 1:50 PM] | <b>Chapter5</b><br>Incompressible Flow in Pipes and Channels | <ul style="list-style-type: none"> <li>Read chapter 5</li> <li>View lecture notes Pages 98- 125</li> <li><b>Submit report for</b></li> </ul>                                                                                                                                                                                                             |                                                                             | [ <b>Quiz 3</b> : Oct 2 2020 11:59 PM]   |

| Modules                                                                                                                | Topic                                                                   | Assignment/Activity (Online)                                                                                                                                                                                                           | Assignment/Activity (Face-to-Face[F2F]) | Due Date                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------|
| [Week 6 Sep 29 2020 and Oct 1 2020]                                                                                    | (week 6)                                                                | <b>Lab 1</b> <ul style="list-style-type: none"> <li>• <b>Complete Quiz 3 on Basic Equation of fluid flow</b></li> </ul>                                                                                                                |                                         | [ <b>Experimental Lab Report 1:</b> Oct 3, 2020 11:59 PM]                                                  |
| <b>Module 7:</b><br>[Week 7 Oct 6 2020 and Oct 8 2020]                                                                 | <b>Chapter 5</b><br>Incompressible Flow in Pipes and Channels           | <ul style="list-style-type: none"> <li>• Read chapter 5</li> <li>• View lecture notes</li> <li>• Review for Exam 1</li> </ul>                                                                                                          | <b>Complete Exam #1</b>                 | [ <b>Exam 1: F2F</b> Oct 8 2020 time 4:30 – 4:50 PM]                                                       |
| <b>Module 8:</b><br>[Week 8 Oct 13 2020 and]<br><br><b>F2F Meeting on</b><br>[Week 8 Oct 15, 2020 Time 12:30 -1:50 PM] | <b>Chapter 5</b><br>Incompressible Flow in Pipes and Channels ( Week 8) | <ul style="list-style-type: none"> <li>• Read chapter 5</li> <li>• View lecture notes</li> <li>• <b>Experimental Lab 2</b></li> <li>• <b>Complete Quiz 4 on Incompressible flow in pipes</b></li> <li>• <b>Complete D 2</b></li> </ul> |                                         | [ <b>Quiz 4:</b> Oct 16 2020 11:59 PM]<br><b>D 2</b> due: Oct 17, 2020 11:59 PM]                           |
| <b>Module 9:</b><br>[Week 9 Oct 20. 2020 and Oct 22, 2020]                                                             | <b>Chapter 6</b><br>Compressible Flow                                   | <ul style="list-style-type: none"> <li>• Read chapter 6</li> <li>• View lecture notes</li> <li>• <b>Submit report for Lab 2</b></li> </ul>                                                                                             |                                         | [ <b>Experimental Lab Report 2:</b> Oct 24, 2020 11:59 PM]]                                                |
| <b>Module 10:</b><br>[Week 10 Oct 27, 2020 and Oct 29 2020]                                                            | <b>Chapter 7:</b><br>Flow Past Immersed Objects                         | <ul style="list-style-type: none"> <li>• Read chapter 7</li> <li>• View lecture notes</li> <li>• Complete In class activity Not graded</li> <li>• Complete D3</li> </ul>                                                               |                                         | <b>D 3</b> due: Oct 30, 2020 11:59 PM]                                                                     |
| <b>Module 11:</b><br>[Week 11 Nov 3,2020 and Nov 5, 2020 ]                                                             | <b>Chapter 8:</b><br>Transportation and metering of fluids              | <ul style="list-style-type: none"> <li>• Read chapter 8- Pump</li> <li>• View lecture notes</li> <li>• <b>Complete Quiz 5</b></li> <li>• <b>Experimental Lab 3</b></li> </ul>                                                          | <b>Experimental Lab 3</b>               | <b>Quiz 5:</b> Nov 6, 2020 11:59PM                                                                         |
| <b>Module 12:</b><br>[Week 12 Nov 10 2020 and Nov 12, 2020]                                                            | <b>Chapter 8:</b><br>Transportation and metering of fluids              | <ul style="list-style-type: none"> <li>• Read chapter 8 – Pump and Compressor</li> <li>• View lecture notes</li> <li>• <b>Submit Lab Report 3</b></li> <li>• <b>Submit Final project report</b></li> </ul>                             |                                         | [ <b>Experimental Lab Report3:</b> Nov13 , 2020 11:59 PM]]<br><b>Final Project report due</b> Nov 15, 2020 |
| <b>Module 13:</b><br>[Week 13 Nov 17, 2020]<br>[Week 13 Nov 19, 2020]                                                  | <b>Chapter 8:</b><br>Transportation and metering of fluids              | <ul style="list-style-type: none"> <li>• Read chapter 8 – Pump and Compressor</li> </ul>                                                                                                                                               | <b>Complete Exam # 2</b>                | [ <b>Exam 2:</b> Nov 19 2020 F2F: 4:30 – 5:50 PM                                                           |
| <b>Module 14:</b><br>[Week 14 Nov 24, 2020]<br><br>[Dec 3 2020, 12:30-1:50 PM]                                         | <b>Presentation</b>                                                     | <ul style="list-style-type: none"> <li>• Final Project Presentation</li> </ul>                                                                                                                                                         |                                         | [ <b>Quiz 6:</b> on Dec 3, 2020 by 11:59 PM                                                                |
| <b>Final Exam:</b><br>[Insert Date]                                                                                    | <b>Presentation</b>                                                     | <ul style="list-style-type: none"> <li>• Final Project Presentation</li> </ul>                                                                                                                                                         |                                         | [Insert Due Date(s)]                                                                                       |

| Modules | Topic | Assignment/Activity<br>(Online) | Assignment/Activity<br>(Face-to-Face[F2F]) | Due Date |
|---------|-------|---------------------------------|--------------------------------------------|----------|
|         |       |                                 |                                            |          |

## Student Support and Success

### John B. Coleman Library

The library and its partners have as their mission to provide resources and instructional material in support of the evolving curriculum, as a partner in Prairie View A&M University's mission of teaching, research, and service and to support the University's core values of access and quality, diversity, leadership, relevance, and social responsibility through emphasis on ten key areas of service. It maintains library collections and access both on campus, online, and through local agreements to further the educational goals of students and faculty. Phone: 936-261-1500; Website: [J. B. Coleman Library](#).

### Academic Advising Services

Academic Advising Services offers students a variety of services that contributes to student success and leads towards graduation. We assist students with understanding university policies and procedures that affect academic progress. We support the early alert program to help students get connected to success early in the semester. We help refer students to the appropriate academic support services when the student is unsure of the best resource for their needs. Some students are supported by faculty advisors in their respective colleges. Your faculty advisor can be identified in PantherTracks. Advisors with Academic Advising Services are available to all students. We are located across campus. You can find your advisor's location by academic major at the [Academic Advising Website](#), Phone: 936-261-5911.

### The University Tutoring Center

The University Tutoring Center (UTC) offers free tutoring and academic support to all registered PVAMU students. The mission of the UTC is to help provide a solid academic foundation that enables students to become confident, capable, independent learners. Competent and caring staff and peer tutors guide students in identifying, acquiring, and enhancing the knowledge, skills, and attitudes needed to reach their desired goals. Tutoring and academic support is offered face-to-face in the [UTC, in virtual face-to-face sessions](#), and through [online sessions at PVPlace](#). Other support services available for students include Supplemental Instruction, Study Break, Academic Success Workshops, and Algebra Study Jam. Location: J. B. Coleman Library, Rm. 307; Phone: 936-261-1561; Email: [pvtutoring@pvamu.edu](mailto:pvtutoring@pvamu.edu); Website: [University Tutoring Center](#).

### The Writing Center

The Writing Center provides well-trained peer tutors that assist students with writing assignments at any stage of the writing process. Tutors help students with various writing tasks from understanding assignments, brainstorming, drafting, revising, editing, researching, and integrating sources. Students have free access to Grammarly online writing assistance. Grammarly is an automated proofreading and plagiarism detection tool. Student must register for Grammarly by using their student email address. In addition, students have access to face-to-face as well as virtual tutoring services either asynchronously via email or synchronously via Zoom. Location: J. B. Coleman Library, Rm. 209; Phone: 936-261-3724; Website: [The Writing Center](#); [Grammarly Registration](#).

### Academic Early Alert

Academic Early Alert is a proactive system of communication and collaboration between faculty, academic advisors, and PVAMU students that is designed to support student success by promptly identifying issues and allowing for intervention. Academic Early Alert helps students by providing a central location to schedule advising appointments, view advisor contact information, and request assistance. Students who recognize that they have a problem that is negatively affecting their academic performance or ability to continue school may self-refer an Academic Early Alert. To do so, students will log in to PVPlace and click on Academic Early Alert on the left sidebar. Phone: 936-261-5902; Website: [Academic Early Alert](#).

### Student Counseling Services

The Student Counseling Services unit offers a range of services and programs to assist students in maximizing their potential for success: short-term individual, couples, and group counseling, as well as

crisis intervention, outreach, consultation, and referral services. The staff is licensed by the State of Texas and provides assistance to students who are dealing with academic skills concerns, situational crises, adjustment problems, and emotional difficulties. Information shared with the staff is treated confidentially and in accordance with Texas State Law. Location: Hobart Taylor, 2<sup>nd</sup> floor; Phone: 936-261-3564; Website: [Student Counseling Services](#).

### **Office of Testing Services**

Testing Services serves to create opportunities by offering suite of exams that aid in the students' academic and professional success. Currently we administer entrance (HESI A2), college readiness (TSI assessment), Prior Learning (CLEP, DSST), and proctored exams. Location: Wilhelmina Delco, 3<sup>rd</sup> Floor, Rm. 305; Phone: 936-261-3627; Email: [aetesting@pvamu.edu](mailto:aetesting@pvamu.edu); Website: [Testing Services](#).

### **Office of Diagnostic Testing and Disability Services**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, contact the Office of Disability Services. As a federally-mandated educational support unit, the Office of Disability Services serves as the repository for confidential disability files for faculty, staff, and students. For persons with a disability, the Office develops individualized ADA letters of request for accommodations. Other services include: learning style inventories, awareness workshops, accessibility pathways, webinars, computer laboratory with adapted hardware and software, adapted furniture, proctoring of non-standardized test administrations, ASL interpreters, ALDs, digital recorders, livescribe, and a comprehensive referral network across campus and the broader community. Location: Hobart Taylor, Rm. 1D128; Phone: 936-261-3583; Website: [Disability Services](#).

### **Center for Instructional Innovation and Technology Services (CIITS)**

Distance Learning, also referred to as Distance Education, is the employment of alternative instructional delivery methods to extend programs and services to persons unable to attend college in the traditional manner. The Center for Instructional Innovation and Technology Services (CIITS) supports student learning through online, hybrid, web-assisted and 2-way video course delivery. For more details and contact information, visit: [CIITS Student Webpage](#); Phone: 936-261-3283.

### **Veteran Affairs**

Veteran Services works with student veterans, current military and military dependents to support their transition to the college environment and continued persistence to graduation. The Office coordinates and certifies benefits for both the G.I. Bill and the Texas Hazlewood Act. Location: Evans Hall, Rm. 102; Phone: 936-261-3563; Website: [Veteran Affairs](#).

### **Office for Student Engagement**

The Office for Student Engagement delivers comprehensive programs and services designed to meet the co-curricular needs of students. The Office implements inclusive and accessible programs and services that enhance student development through exposure to and participation in diverse and relevant social, cultural, intellectual, recreational, community service, leadership development and campus governance. Location: Memorial Student Center, Rm. 221; Phone: 936-261-1340; Website: [Office for Student Engagement](#).

### **Career Services**

Career Services supports students through professional development, career readiness, and placement and employment assistance. The Office provides one-on-one career coaching, interview preparation, resume and letter writing, and career exploration workshops and seminars. Services are provided for students at the Northwest Houston Center and College of Nursing in the Medical Center twice a month or on a requested basis. Distance Learning students are encouraged to visit the Career Services website for information regarding services provided. Location: Anderson Hall, 2<sup>nd</sup> floor; Phone: 936-261-3570; Website: [Career Services](#).

### **University Rules and Procedures**

**Academic Misconduct (See Student Planner)**

You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Planner, especially the section on academic misconduct (see *University Administrative Guidelines on Academic Integrity*). Students who engage in academic misconduct are subject to university disciplinary procedures. As listed in the PVAMU Undergraduate Catalog, Graduate Catalog, and the Student Planner, the following are examples of prohibited conduct. This list is not designed to be all-inclusive or exhaustive. In addition to academic sanctions, any student found to have committed or to have attempted to commit the following academic misconduct may also be subject to disciplinary review and action as outlined in the PVAMU Student Planner.

**Forms of Academic Dishonesty:**

1. Cheating: Deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not learned, giving or receiving aid unauthorized by the instructor on assignments or examinations. Examples: unauthorized use of notes for a test; using a "cheat sheet" on a quiz or exam; any alteration made on a graded test or exam which is then resubmitted to the teacher.
2. Plagiarism: Careless or deliberate use of the work or the ideas of another; representation of another's work, words, ideas, or data as your own without permission or appropriate acknowledgment. Examples: copying another's paper or answers, failure to identify information or essays from the Internet and submitting or representing it as your own; submitting an assignment which has been partially or wholly done by another and claiming it as yours; not properly acknowledging a source which has been summarized or paraphrased in your work; failure to acknowledge the use of another's words with quotation marks.
3. Multiple Submission: Submission of work from one course to satisfy a requirement in another course without explicit permission. Example: using a paper prepared and graded for credit in one course to fulfill a requirement and receive credit in a different course.
4. Conspiracy: Agreeing with one or more persons to commit an act of academic/scholastic dishonesty.
5. Fabrication of Information/Forgery: Use or submission of contrived, invented, forged, or altered information in any assignment, laboratory exercise, or test; tampering with or production of a counterfeit document, particularly documents which make up the student's academic record. Examples: making up a source or citing nonexistent publication or article; representing made up data as real for an experiment in a science laboratory class; forging a change of grade or student withdrawal record; falsifying any document related to a student academic exercise.

**Nonacademic Misconduct (See Student Planner)**

The University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, or (2) the ability of students to benefit from the instructional program, or (3) the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Office for Student Conduct under nonacademic procedures.

**Sexual Misconduct**

Sexual harassment of students and employees at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating the university's sexual harassment policy will be subject to disciplinary action. In accordance with the Texas A&M University System guidelines, your instructor is obligated to report to the Office of Title IX Compliance ([titleixteam@pvamu.edu](mailto:titleixteam@pvamu.edu)) any instance of sexual misconduct involving a student, which includes sexual assault, stalking, dating violence, domestic violence, and sexual harassment, about which the instructor becomes aware during this course through writing, discussion, or personal disclosure. The faculty and staff of PVAMU actively strive to provide a learning, working, and living environment that promotes respect that is free from sexual misconduct, discrimination, and all forms of violence. If students, faculty, or staff would like assistance, or have questions, they may contact the Title IX Coordinator at 936-261-

2144 or [titleixteam@pvamu.edu](mailto:titleixteam@pvamu.edu). More information can be found at the [Title IX Webpage](#) including confidential resources available on campus.

### **Pregnancy, Pregnancy-related, and Parenting Accommodations**

Title IX of the Education Amendments of 1972 prohibits sex discrimination, which includes discrimination based on pregnancy, marital status, or parental status. Students seeking accommodations related to pregnancy, pregnancy-related condition, or parenting (reasonably immediate postpartum period) are encouraged to contact Student Disability Services or the Dean of Students' Office for additional information and to request accommodations. More information can be found at this [webpage](#).

### **Non-Discrimination Statement**

Prairie View A&M University does not discriminate on the basis of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation or gender identity in its programs and activities. The University is committed to supporting students and complying with the Texas A&M University System non-discrimination policy. It seeks to establish an environment that is free of bias, discrimination, and harassment. If you experience an incident of discrimination or harassment, we encourage you to report it. If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are individuals who can meet with you. The Director of Equal Opportunity & Diversity has been designated to handle inquiries regarding the non-discrimination policies, and can be reached at Harrington Science Building, Suite 109 or by phone 936-261-1744 or 1792.

### **Class Attendance Policy (See Catalog for Full Attendance Policy)**

Prairie View A&M University requires regular class attendance. Attending all classes supports full academic development of each learner whether classes are taught with the instructor physically present or via distance learning technologies such as interactive video and/or internet. Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class during regular semesters and summer terms. Each faculty member will include the University's attendance policy in each course syllabus.

### **Student Academic Appeals Process**

Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the University Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint. Students can file Academic Complaints and/or Grade Appeals at this [webpage](#).

### **Technical Considerations**

#### **Minimum Recommended Hardware and Software:**

- Intel PC or Laptop with Windows 10 or later version; Mac with OS High Sierra\*
- Smartphone or iPad/Tablet with Wi-Fi\*
- High speed Internet access
- 8 GB Memory
- Hard drive with 320 GB storage space
- 15" monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Most current version of Google Chrome, Safari or Firefox

\*Smartphone, Google Chrome books and Android tablets may not be supported. iPads are the only tablets supported.

**Note:** Be sure to enable Java & pop-ups in the Web browser preferences

#### **Participants should have a basic proficiency of the following computer skills:**

- Sending and receiving emails

- A working knowledge of the Internet
- Microsoft Word (or a program convertible to Word)
- Acrobat PDF Reader
- Windows or Mac OS
- Video conferencing software

### **Netiquette (online etiquette)**

Students are expected to participate in all discussions and virtual classroom chats as directed. Students are to be respectful and courteous to others on discussions boards. Foul or abusive language will not be tolerated. Do not use ALL CAPS for communicating to others AS IT CAN BE INTERPRETED AS YELLING. Avoid slang terms such as “wassup?” and texting abbreviations such as “u” instead of “you.” Limit and possibly avoid the use of emoticons. Be cautious when using humor or sarcasm as tone is sometimes lost in an email or discussion post and the message might be taken seriously or sound offensive.

### **Video Conferencing Etiquette**

When using Zoom, WebEx or other video conferencing tools, confirm the visible area is tidy, clear of background clutter, inappropriate or offensive posters, and other distractions. Ensure you dress appropriately and avoid using high traffic or noisy areas. Stay muted when you are not speaking and avoid eating/drinking during session. Before class session begins, test audio, video and lighting to alleviate technology issues.

### **Technical Support**

Students should go to the [Password Reset Tool](#) if they have password issues. The page will provide instructions for resetting passwords and contact information if login issues persist. For other technical questions regarding eCourses, call the Center for Instructional Innovation and Technology Services (CIITS) at 936-261-3283 or email [ciits@pvamu.edu](mailto:ciits@pvamu.edu).

### **Communication Expectations and Standards**

Emails or discussion postings will receive a response from the instructor, usually in less than 48 hours. Urgent emails should be marked as such. Check regularly for responses.

### **Discussion Requirement**

Online courses often require minimal to no face-to-face meetings. However, conversations about the readings, lectures, materials, and other aspects of the course can take place in a seminar fashion. This will be accomplished by the use of the discussion board. The exact use of discussion will be determined by the instructor.

**It is strongly suggested** that students type their discussion postings in a word processing application such as Word and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, copy and paste to the discussion board.

### **COVID-19 Campus Safety Measures**

To promote public safety and protect students, faculty, and staff during the COVID-19 pandemic, Prairie View A&M University has adopted policies and practices for the Fall 2020 academic term to limit virus transmission. Students must observe the following practices while participating in face-to-face courses and course-related activities (office hours, help sessions, transitioning to and between classes, study spaces, academic services, etc.):

- **Self-monitoring** - Students should follow CDC recommendations for self-monitoring. Students who have a fever or exhibit symptoms of COVID-19 should participate in class remotely and should not participate in face-to-face instruction.
- **Face Coverings** - Face coverings (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such

as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain.

- **Physical Distancing** - Physical distancing must be maintained between students, instructors, and others in course and course-related activities.
- **Classroom Ingress/Egress** - Students must follow marked pathways for entering and exiting classrooms and other teaching spaces. Students should leave classrooms promptly after course activities have concluded, should not congregate in hallways and should maintain 6-foot physical distancing when waiting to enter classrooms and other instructional spaces.
- **Face-to-face Class** - To attend a face-to-face class, students must wear a face covering (or a face shield if they have an exemption letter). If a student refuses to wear a face covering, the instructor should ask the student to leave and join the class remotely. If the student does not leave the class, the faculty member should report that student to the Office for Student Conduct for adjudication. Additionally, the faculty member may choose to teach that day's class remotely for all students.
- **COVID-19 Guidelines for Student Conduct Adjudication** - The mandatory COVID-19 Training/Certification taken by all students serves as the 1st Warning for violation of COVID-19 Guidelines.
  - 1<sup>st</sup> incident: upon review of Incident Report and finding of responsibility — Conduct Probation
  - 2<sup>nd</sup> incident: upon review of Incident Report and finding of responsibility — Suspension
  - Consult the Code of Student Conduct in the Student Planner or [Student Conduct website](#) for additional information on Conduct Probation and Suspension.
- **Personal Illness and Quarantine** - Students required to quarantine must participate in courses and course-related activities remotely and must not attend face-to-face course activities. Students should notify their instructors of the quarantine requirement. Students under quarantine are expected to participate in courses and complete graded work unless they have symptoms that are too severe to participate in course activities. Students experiencing personal injury or illness that is too severe for the student to attend class qualify for an excused absence. To receive an excused absence, students must provide appropriate documentation to the Office for Student Conduct, [studentconduct@pvamu.edu](mailto:studentconduct@pvamu.edu).

# End of Semester Course Assessment Report

This summary contains the following Information

## 1. Performance Statistics

- Total number of students in class
- The class average performance (**stated as %**) in each course outcome assessed in this class and the **two previous times course was assessed**.
- The acceptable class average for the class in each outcome area as set by your Department. **You cannot use any number of your choice**
- Percentage of students who scored below the expected average in each outcome.

## 2. Implementation Summary

- Brief summary of plans implemented during the semester based on last assessment report

## 3. Perceived Problems

- Instructor's **critical evaluation** of perceived problems that affected students' performance. **Realistic problems should be identified throughout the semester and summarized in this section of the report.**

## 4. New Plans for Addressing Problems

- Instructor's plans for addressing the perceived problems the next time the class is taught. **These should be specific enough for another instructor to implement. Most of these should be things that, you, the instructor can implement to help students to improve. Be creative.**

## 5. Overall Trend over last three assessment periods

- Instructors summary of overall performance trend for each outcome measured over the last three periods.

## 5. Were Expectations Met?

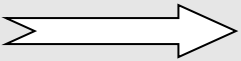
- Answer **YES** if the **class average was above the expected average** and the **stated percentage of students** scored at or above the expected average, else answer **NO**.

# END OF SEMESTER COURSE OUTCOME ASSESSMENT REPORT

## CHEG 3023-UNIT OPERATIONS FALL 2020 SEMESTER

**Report Prepared by: Dr. Nabila Shamim**

**Report Date: December 12, 2020**

| Semester                      | Analysis Type                                                                       | Number of Students | Outcome 7<br>An ability to acquire and apply new knowledge as needed using appropriate learning strategies                                                                                                                                                                                                                                                                                                                                                                                         |               |                                   | Outcome 6<br>An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                                   |
|-------------------------------|-------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------|
|                               |                                                                                     |                    | Expected Average                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Class Average | % Students Above Expected Average | Expected Average                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Class Average | % Students Above Expected Average |
| Fall 2020                     | Online                                                                              | 24                 | 75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 87            | 95                                | 75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 78            | 77                                |
| Fall 2019                     | Direct                                                                              | 21                 | 75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 88            | 100                               | 75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 85            | 100                               |
| Fall 2018                     | Direct                                                                              | 28                 | 75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 90            | 100                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |                                   |
| Implementation Summary        |    |                    | A group project was given to the students related to practical issues so that they can visualize the problems. Due to pandemic students were not able to build hands on system to demonstrate their project. Students gave reports and oral presentation of their project. Students develop projects on Bernoulli's principle, Friction and static pressure head and pump selection. The project went really well. Each members of the group worked hard to achieve their goal.                    |               |                                   | Lab manual were prepared and made available through canvas. Basics of report writing were explained in the class. Instructor emphasized that students should read the manual carefully before writing the lab report. The instructor also clearly stated the required components of the assigned report during the class session. <b>Flipped technology was used. students watched the experiment first and then completed the worksheet. Students watched videos on frictional loss in pipe using JOVE. Students watched videos on how drag works on golf ball and why it is important.</b> |               |                                   |
| Perceived Problems            |    |                    | The major problems were:<br><br>1. Although this year group project went well only one group struggled with basic understandings of fluid flow.<br><br>2. Due to pandemics students faces financial issues, for which some students worked during class time. Some attended class using cell phone.<br><br>3. Internet was always a problem.                                                                                                                                                       |               |                                   | Students faced trouble to conceptualize continuity equation, and analyze a fluid, pump or drag problems that is different from an example problem they have seen before. Students had problems with interpretation of the results and did not adequately show how engineering judgement was used in the conclusions                                                                                                                                                                                                                                                                          |               |                                   |
| Plans for Addressing Problems |  |                    | The following is recommended for implementation:<br><br>1. Project went well, continue similar process as before, for example Team and individual assessments taken each week.<br><br>2. Zoom meeting to discuss project related issues with group.<br><br>3. College/Department should set admission requirements at a level to allow quality students into the College of Engineering because a large percentage of the students do not have the necessary background to succeed in engineering. |               |                                   | The following is recommended for implementation the next time the course is offered.<br><br>Examples of proper interpretation of data and how to support conclusions with engineering judgement will be emphasized the next time this outcome is assessed.<br><br>More active learning method can be implemented.                                                                                                                                                                                                                                                                            |               |                                   |
| Overall Trend over Periods    |  |                    | The average has trended to above 85% for the last three semesters. The instructor emphasized the importance of technical writing skills, data analysis and presentation and also how the lab reports' grades can improve their overall grades. Extra credit work was given to improve the grade. The performance has been dramatically improved.                                                                                                                                                   |               |                                   | The average for this outcome 78. Students conducted two experiments on fluid mechanics. One is based on fluid flow and Reynolds number and another is based on Bernoulli's equation. One group project and one individual project was given to evaluate each student.                                                                                                                                                                                                                                                                                                                        |               |                                   |

|                        |                                                                   |     |     |
|------------------------|-------------------------------------------------------------------|-----|-----|
| Were Expectations Met? | Average $\geq 75\%$ ? and $\geq 70\%$ students avg. $\geq 70\%$ ? | YES | YES |
|------------------------|-------------------------------------------------------------------|-----|-----|

**Table 1. END OF SEMESTER COURSE OUTCOME ASSESSMENT REPORT**  
**CHEG 3023 Unit Operations**  
**Fall 2018 SEMESTER**

**Report Prepared by: Dr. Nabila Shamim Report Date: December 18, 2018**

| Semester                             | Analysis Type                                                                       | Number of Students | Outcome e<br>Ability to apply knowledge of mathematics, science, & engineering                                                                                                                                                                                                                                                                                                    |                                                  |               |                                   | Outcome i<br>Ability to recognize the need for and the ability to engage in life long learning                                                                                                                                                                                                                                        |                                                  |                 |                                   |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|---------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------|-----------------------------------|
|                                      |                                                                                     |                    | Expected Average                                                                                                                                                                                                                                                                                                                                                                  | Expected Percent of students at or above average | Class Average | % Students Above Expected Average | Expected Average                                                                                                                                                                                                                                                                                                                      | Expected Percent of students at or above average | Class Average % | % Students Above Expected Average |
| Fall 2018                            | Direct                                                                              | 28                 | 75                                                                                                                                                                                                                                                                                                                                                                                | 70                                               | 71            | 65                                | 75                                                                                                                                                                                                                                                                                                                                    | 70                                               | 90              | 100                               |
| Fall 2017                            | Direct                                                                              | 35                 | 75                                                                                                                                                                                                                                                                                                                                                                                | 70                                               | 68            | 58                                | 75                                                                                                                                                                                                                                                                                                                                    | 70                                               | 86              | 100                               |
| Fall 2016                            | Direct                                                                              | 35                 | 75                                                                                                                                                                                                                                                                                                                                                                                | 70                                               | 75            | 54                                | 75                                                                                                                                                                                                                                                                                                                                    | 70                                               | 90              | 97                                |
| Fall 2015                            | Direct                                                                              | 25                 | 75                                                                                                                                                                                                                                                                                                                                                                                | 70                                               | 80            | 87                                | 75                                                                                                                                                                                                                                                                                                                                    | 70                                               | 92              | 100                               |
| Fall 2014                            | Direct                                                                              | 24                 | 75                                                                                                                                                                                                                                                                                                                                                                                | 70                                               | 75.3          | 70                                | 75                                                                                                                                                                                                                                                                                                                                    | 70                                               | 76              | 75.7                              |
| <b>Implementation Summary</b>        |    |                    | Review problems were given for each topic and most of them were solved in class. Instructor gave in class activity and group works. Short quizzes were taken throughout the semester to review the problems. Scheduled and extra office hours were provided to address student issues JOVE online resource was used to provide clear visual about fluid dynamics, piping network. |                                                  |               |                                   | A group project was given to the students related to practical issues so that they can visualize the problems. Student builds hands on system to demonstrate their project. Students gave reports and oral presentation of their project. Students did hands on projects on Bernoulli's principle, Friction and static pressure head. |                                                  |                 |                                   |
| <b>Perceived Problems</b>            |    |                    | Students are not good in recognizing simple problem statements; they have problems in unit conversions, understanding basic equations like pump head, and power. Students cannot relate the knowledge to the practical field. The class time was only 50 min so instructor could not go to individual groups to discuss each and every issue.                                     |                                                  |               |                                   | Few Students faced trouble to conceptualize, identify the laws, and analyze a fluid, pump or drag problems that is different from an example problem they have seen before. They are starting to finish the project at the last moment. not all students were involved in the project.                                                |                                                  |                 |                                   |
| <b>Plans for Addressing Problems</b> |  |                    | Tutor and grader help is suggested. More hands on / laboratory projects related to fluid dynamics can help them to understand better.                                                                                                                                                                                                                                             |                                                  |               |                                   | Project went really well, need to work more on team work. Team and individual assessment were taken each week and at the final to address issues on group. Instructor can open discussion on google doc and can get more updates frequently.                                                                                          |                                                  |                 |                                   |
| <b>Overall Trend over Periods</b>    |  |                    | The Class performed below average.                                                                                                                                                                                                                                                                                                                                                |                                                  |               |                                   | The Class performed above average                                                                                                                                                                                                                                                                                                     |                                                  |                 |                                   |
| <b>Were Expectations Met?</b>        | Average ≥ 75%?<br>70% students avg. ≥ 75%?                                          |                    | <b>NO</b>                                                                                                                                                                                                                                                                                                                                                                         |                                                  |               |                                   | <b>YES</b>                                                                                                                                                                                                                                                                                                                            |                                                  |                 |                                   |

**Grade Sheet Showing  
Student and Class Performance in Outcomes  
The computed semester average in each outcome  
as stated in the Assessment report are  
highlighted in boldface**

## Grade Sheet Showing Student and Class Performance in Course Outcomes CHEG 3023 -Y02 Unit Operations Fall 2020

|                                   | outcome 2              |                         |                    | Outcome 7          |                    |                    |
|-----------------------------------|------------------------|-------------------------|--------------------|--------------------|--------------------|--------------------|
|                                   | Report 1 Flow Rate, Av | Report 3 Hydraulic Loss |                    | Final Project Rep  | Final Presentation |                    |
|                                   | outcome 2.1 and 2.3    | Outcome 2.1 and 2.3     | Total              | Outcome 7.2        | Outcome 7.1        | Total              |
|                                   | 100                    | 100                     | 100                | 100                | 100                | 100                |
|                                   | 83                     | 92                      | 87.5               | 85                 | 87                 | 86                 |
|                                   | 66                     | 91                      | 78.5               | 92                 | 90                 | 91                 |
|                                   | 66                     | 83                      | 74.5               | 92                 | 95                 | 93.5               |
|                                   | 85                     | 78                      | 81.5               | 95                 | 95                 | 95                 |
|                                   | 83                     | 94                      | 88.5               | 85                 | 87                 | 86                 |
|                                   | 66                     | 89                      | 77.5               | 92                 | 95                 | 93.5               |
|                                   | 83                     | 95                      | 89                 | 85                 | 87                 | 86                 |
|                                   | 85                     | 90                      | 87.5               | 95                 | 95                 | 95                 |
|                                   | 63                     | 81                      | 72                 | 78                 | 80                 | 79                 |
|                                   | 85                     | 78                      | 81.5               | 95                 | 95                 | 95                 |
|                                   | 83                     | 66                      | 74.5               | 98                 | 97                 | 97.5               |
|                                   | 85                     | 82                      | 83.5               | 95                 | 95                 | 95                 |
|                                   | 83                     | 85                      | 84                 | 98                 | 97                 | 97.5               |
|                                   | 63                     | 92                      | 77.5               | 78                 | 80                 | 79                 |
|                                   | 83                     | 84                      | 83.5               | 85                 | 87                 | 86                 |
|                                   | 63                     | 0                       | 31.5               | 78                 | 80                 | 79                 |
|                                   | 85                     | 89                      | 87                 | 95                 | 95                 | 95                 |
|                                   | 44                     | 50                      | 47                 | 0                  | 0                  | 0                  |
|                                   | 83                     | 81                      | 82                 | 98                 | 97                 | 97.5               |
|                                   | 83                     | 92                      | 87.5               | 98                 | 97                 | 97.5               |
|                                   | 83                     | 79                      | 81                 | 98                 | 97                 | 97.5               |
|                                   | 66                     | 87                      | 76.5               | 92                 | 95                 | 93.5               |
| <b>Average</b>                    | <b>75.86363636</b>     | <b>79.90909091</b>      | <b>77.88636364</b> | <b>86.68181818</b> | <b>87.40909091</b> | <b>87.04545455</b> |
| <b>Expected Average</b>           |                        |                         | <b>75</b>          |                    |                    | <b>75</b>          |
| <b>% of Student above average</b> |                        |                         | <b>77.27272727</b> |                    |                    | <b>95.45454545</b> |

### Outcome 2

An ability to apply engineering design to produce solutions that meet specified needs with consideration. understanding the Problem and developing plans for the project to satisfy the need.

### Outcome 7

An ability to acquire and apply new knowledge as needed using appropriate learning strategies."

7.1: Acquire new knowledge using the appropriate learning strategies

7.2: Students are able to demonstrate appropriate use of the new knowledge to solve problems oral presentation.

**OUTCOME SPECIFIC ASSIGNMENTS  
USED TO ASSESS OUTCOMES**

## **ASSIGNMENTS FOR OUTCOME 2**

**An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factor**

**CHEMICAL ENGINEERING DEPARTMENT  
OUTCOMES SPECIFIC ASSIGNMENT COVER SHEET  
UNIT OPERATIONS  
FALL 2020  
Instructor: Dr. Nabila Shamim**

**Title of Assignment**

**REPORT # 1**

**Outcome Measured Using this Assignment**

**Outcome 2**

An ability to apply engineering design to produce solutions that meet specified needs with consideration.  
understanding the Problem and developing plans for the project to satisfy the need

**Check the complex engineering problem characteristics related to this assignment**

| Assignment problem |                                    |
|--------------------|------------------------------------|
|                    | Theory                             |
|                    | Experimental design                |
|                    | Understand the procedure and solve |
|                    | Results analysis and Discussion    |

**Brief justification of why this assignment is suitable for this outcome**

The students' ability to apply engineering design to produce solutions that meet specified needs with consideration.

Instructor: Dr. Nabila Shamim  
Assistant Processor, Department of Chemical Engineering, Prairie View A & M University  
**ABET OUTCOME 2:** An ability to apply engineering design to produce solutions that meet specified needs with consideration.  
Understanding the Problem and developing plans for the project to satisfy the need

**Flow rate Average velocity and Reynold's number**

Water at 25oC is flowing in a circular pipe. The velocity of the flowing fluid was measured as a function of radial position. The data are summarized in the Table below.

Table 1: Velocity Radial Position data

| Position, cm | Velocity, cm/s | Position, cm | Velocity, cm/s |
|--------------|----------------|--------------|----------------|
| 0            | 10             | 0.6          | 6.4            |
| 0.1          | 9.9            | 0.7          | 5.1            |
| 0.2          | 9.6            | 0.8          | 3.6            |
| 0.3          | 9.1            | 0.9          | 1.9            |
| 0.4          | 8.4            | 1.0 (wall)   | 0              |
| 0.5          | 7.5            |              |                |

1. Draw the schematic diagram of the process
2. Calculate the flowrate for each velocity
3. Calculate average velocity and Reynolds number if the fluid is water at 25oC.
4. Is the flow laminar or turbulent?
5. What is the shear force exerted at the pipe surface?

## Grading Rubric

- |                                                                                                                        |           |
|------------------------------------------------------------------------------------------------------------------------|-----------|
| 1. Problem Statement                                                                                                   | 5 Points  |
| 2. Objectives                                                                                                          | 5 Points  |
| 3. Identify the problem (given information)                                                                            | 5 Points  |
| 4. Schematic diagram                                                                                                   | 15 Points |
| 5. Formulation of the problem                                                                                          | 15 Points |
| ➤ Step by step show the solution algorithm that is equations that need to be used to solve the problem.                |           |
| 6. Use a spread sheet to analyze data to calculate above information<br>(Flowrate for each velocity, average velocity) | 25 Points |
| ➤ Present the raw data in a graphical form                                                                             |           |
| ➤ Explain your observation of the data                                                                                 |           |
| ➤ Present the calculated data in tabular form                                                                          |           |
| ➤ Present the calculated data in graphical form<br>(clearly write the axes name and units)                             |           |
| ➤ Explain your observation                                                                                             |           |
| 7. Calculate Reynolds number? Is the flow laminar or turbulent                                                         | 10 Points |
| 8. Calculate the shear force exerted on the pipe surface?                                                              | 10 Points |
| ➤ Explain your observation                                                                                             |           |
| 9. Discuss the results and Draw a conclusion based on your results                                                     | 10 Points |

STUDENT WORK



Hydarulic loss  
Toyosi.pdf

# CHEMICAL ENGINEERING DEPARTMENT OUTCOMES SPECIFIC ASSIGNMENT COVER SHEET UNIT OPERATIONS

FALL 2020

Instructor: Dr. Nabila Shamim

Title of Assignment

PROJECT REPORT

Outcome Measured Using this Assignment

## Outcome 7

An ability to acquire and apply new knowledge as needed, using appropriate learning strategies. (Written Communication)

Check the complex engineering problem characteristics related to this assignment

|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ability to prepare an executive summary for the report</b><br>Requires students to:                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                                           | Prepare an executive summary of 5 to 8 pages                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Ability to organize, plan and properly format a written technical report</b><br>Requires students to:                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| x                                                                                                                         | Organize report by chapters, major sections, subsections and paragraphs                                                                                                                                                                                                                                                                                                                                                                                        |
| x                                                                                                                         | Provide Title Page, and Table of Contents, list of Figures, and List of Tables properly formatted.                                                                                                                                                                                                                                                                                                                                                             |
| x                                                                                                                         | Provide figure and table numbers with titles and reference and discuss each table and figure in accord with standard practice.                                                                                                                                                                                                                                                                                                                                 |
| x                                                                                                                         | Properly cite references in the report and provide well formatted reference list at the end.                                                                                                                                                                                                                                                                                                                                                                   |
| x                                                                                                                         | Prepare the written report in accord with standard report formatting Manual                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Ability to compose original texts and properly apply the conventions of written language.</b><br>Requires students to: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| X                                                                                                                         | Properly apply capitalization, punctuation, and penmanship, to communicate clearly and spell proficiently,                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                                           | Apply standard grammar and usage to communicate clearly and effectively in writing <b>using complete sentences</b> , good subject-verb agreement, pronoun referents, and parts of speech, properly using adjectives, adverbs, prepositional phrases appropriately, conjunctions to connect ideas to make writing vivid and precise, and use available technology to support aspects of creating, revising, editing, spell checking, and publishing the report. |
| <b>Ability to provide appropriate discussion, conclusions and recommendations</b><br>Requires students to                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| X                                                                                                                         | summarize the goals, objectives, and indicate whether they were met.                                                                                                                                                                                                                                                                                                                                                                                           |
| X                                                                                                                         | summarize the report chapter by chapter                                                                                                                                                                                                                                                                                                                                                                                                                        |
| X                                                                                                                         | summarize constraints and codes and indicate whether they were met for design reports<br>Summarizes how issues relating to public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors were considered/addressed for design reports.                                                                                                                                                                          |
| X                                                                                                                         | Provide logical conclusions Provide logical conclusions and recommendations (including strengths and weaknesses)                                                                                                                                                                                                                                                                                                                                               |

Brief justification of why this assignment is suitable for this outcome

The student's ability to apply new knowledge as needed, using appropriate learning strategies.

## AND REQUIREMENTS

### Unit Operations CHEG 3023

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Instructor: Dr. Nabila Shamim

Assistant Professor, Department of Chemical Engineering, Prairie View A & M University

**ABET OUTCOME 7:** *An ability to acquire and apply new knowledge as needed, using appropriate learning strategies*

#### Specific Aim:

Being curious and constantly looking for inspiration are critical parts of learning. To be successful as an engineer, education must be broad, and you must think out of the box. The project requirement aims to encourage a habit of lifelong learning about innovation, creative thinking, team work and many other aspects of the engineering world. The goal of this requirement is to help inspire the habits of being open to new ideas or problems and solve it as a successful, innovative engineer.

**Assignment:** An open-ended problem regarding unit operations in chemical engineering

*For Example: Hydraulic Folding Boom Sprayer Development and Fabrication*

#### Guideline for the project:

- (i) Inquisitive studies on the problem and acquire knowledge and data for solving the problem.
- (ii) Gather information on relevant fundamentals, theory / concept (demonstrate technical competence) and relate them to the assignment/project.
- (iii) Effectively use the library and online resources for research, read magazines, journals, and other print or online materials so as to be aware of current developments in the discipline; and provide and properly site the sources in a list of references in the literature review section and other relevant sections of the report.

**How to Write the Report:**

**Grading Rubric for  
Unit Operation CHEG 3023  
Project**

- 10 Title**
  - Cover page
  - Table of Content
  - List of Table
  - List of Figures
- 5 Abstract**
  - Conveys a sense of the full report concisely and effectively
- 10 Introduction/Theory**
- 20 Material Selection, Availability Cost of Raw materials.**
  - o List of materials required for the system
  - o Pipe size and types
  - o Location of the pump
  - o Length of pipe for all parts of the system
  - o Valves and fittings
  - Specification of a pump
- 25 Proposed design: Set up a model for calculations, key results and figures.**
  - o Piping layout
  - o Presents visuals clearly and accurately
  - o Presents verbal findings clearly and with sufficient support
  - o **Results**
- 10 Discussion**
- 10 Conclusion**
  - Convincingly describes what has been learned in the project
- 5 References**
- 5 Minutes of Meeting**
  - Weekly
  - Assessment



Group 3.pdf

**CHEMICAL ENGINEERING DEPARTMENT  
OUTCOMES SPECIFIC ASSIGNMENT COVER SHEET  
UNIT OPERATIONS**

**FALL 2020**

**Instructor: Dr. Nabila Shamim**

**Title of Assignment**

**Oral Presentation**

**Outcome Measured Using this Assignment**

**Outcome 7**

**An ability to communicate effectively with a range of audiences  
(Oral Communication)**

**Check the communication characteristics related to this assignment**

|          |                                                                                                                                                                                                                        |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>X</b> | Involves ability to organize, plan, design/prepare and use appropriate visual aids for communication/presentation to a range of audiences (executives, technical and non-technical).                                   |
| <b>X</b> | Involves ability to demonstrate technical knowledge and understanding of the subject, prepare and display prototypes or models when they are necessary, respond clearly to questions in a professional manner          |
| <b>X</b> | Requires use of correct grammatical English and technical terms appropriate to technical area and audience type; ability to speak with clarity and confidence, maintain good posture and eye contact with the audience |
| <b>X</b> | Geared to diverse groups of stakeholders (students and industrial representatives, etc.)                                                                                                                               |

**Brief justification of why this assignment is suitable for this outcome**

**Project presentation Slides for Oral communication**

The slides and performance criteria based rubric for grading the oral presentation is provided to demonstrate student performance in oral presentation.

Instructor: Dr. Nabila Shamim

Assistant Processor, Department of Chemical Engineering, Prairie View A & M University

***ABET OUTCOME 7: An ability to acquire and apply new knowledge as needed, using appropriate learning strategies***

**Specific Aim:**

Being curious and constantly looking for inspiration are critical parts of learning. To be successful as an engineer, education must be broad, and you must think out of the box. The project requirement aims to encourage a habit of lifelong learning about innovation, creative thinking, team work and many other aspects of the engineering world. The goal of this requirement is to help inspire the habits of being open to new ideas or problems and solve it as a successful, innovative engineer.

**Assignment:** An open-ended problem regarding unit operations in chemical engineering

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# CHEG 3023 Project Evaluation \_\_\_\_\_

| Section<br>Points | Points           |                                                                                                                                                                                                                                                                                              |
|-------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5                 | 5                | <b>Title</b><br>Describes Titlelet concisely, adequately, appropriately                                                                                                                                                                                                                      |
| 5                 | 5                | <b>Abstract</b><br>Conveys a sense of the full report concisely and effectively                                                                                                                                                                                                              |
| 15                | 2<br>5<br>8      | <b>Introduction/Theory</b><br>Successfully establishes the concept<br>Effectively presents the objectives and purpose<br>governing equations                                                                                                                                                 |
| 15                | 15               | <b>Material Selection, Availability Cost of Raw materials.</b><br>o List of materials required for the system<br>o Pipe size and types<br>o Location of the pump<br>o Length of pipe for all parts of the system<br>o Valves and fittings<br>Specification of a pump                         |
| 20                | 5<br>5<br>5<br>5 | <b>Proposed design: Set up a model for simulation, calculations, key results and figures.</b><br>o Piping layout<br>o Presents visuals clearly and accurately<br>o Presents verbal findings clearly and with sufficient support<br>Successfully integrates verbal and visual representations |
| 15                | 5<br>5<br>5      | <b>Results</b><br>Friction<br><b>Pump Power</b><br>NPSHA                                                                                                                                                                                                                                     |
| 10                | 2<br>2           | <b>Discussion</b><br>Opens with effective statement of support of hypothesis<br>Backs up statement with reference to appropriate findings                                                                                                                                                    |

- 3 Provides sufficient and logical explanation for the statement
- 3 Sufficiently addresses other issues pertinent to lab

5

### **Conclusion**

- 5 Convincingly describes what has been learned in the lab

5

### **Presentation**

- 2 Citations and references adhere to proper format
- 1 Format of tables and figures is correct
- 1 Report is written in scientific style: clear and to the point
- 1 Grammar and spelling are correct

5

### **Students presence and participation in the lab**



aumyiacollins\_8243  
\_857887\_Unit Ops Pi