Course Number and Title: CHM 270 Honors Chemistry Work Experience

Campus Location:
Georgetown, Stanton

Effective Date:
2021-51

Prerequisite:
CHM 151 and Instructor permission

Co-Requisites:
None

Course Credits and Hours:
2.00 credits
0.00 lecture hours/week
7.00 lab hours/week

Course Description:
Upon recommendation by the instructor, the student placed in this honors course will gain experience working as a laboratory technician in research, industrial, service, manufacturing or other facility in chemistry or related field.

Required Text(s):
Obtain current textbook information by viewing the campus bookstore - https://www.dtcc.edu/bookstores online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:
None

Schedule Type:
Classroom Course

Disclaimer:
None

Core Course Performance Objectives (CCPOs):

1. Apply learned didactic and lab principles into the laboratory setting. (CCC 7; PGC CHM 1, 3, CEM 1, 3)
2. Employ good laboratory practices while using instrumentation. (CCC 6, 7; PGC CHM 2, 4, 9, CEM 2, 4, 9)
3. Exhibit professional behaviors in all matters relating to laboratory working environment. (CCC 3, 4; PGC CHM 2, 4, 7, CEM 2, 4, 7)
4. Comply with college and laboratory affiliate departmental policies and procedures. (CCC 4; PGC CHM 2, 7, CEM 2, 7)
5. Use critical thinking and problem solving skills in a laboratory setting. (CCC 2; PGC CHM 1, 10 CEM 1, 10,)
6. Perform laboratory testing with appropriate time management expectations. (CCC 1, 2, 7; PGC CHM 2, 4, 5, 6, 8, 9, CEM 2, 4, 5, 6, 8, 9)
7. Apply principles of safety and show competency with laboratory safety regulations. (CCC 4; PGC CHM 2, 7, CEM 2, 7)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):
Upon completion of this course, the student will:

1. Apply learned didactic and lab principles into the laboratory setting.
    1. Use technical vocabulary.
    2. Use common solution laboratory techniques.
    3. Distinguish among and use stock reagents to specifications.
    4. Maintain reagent's integrity (store properly, avoid cross-contamination, use at proper temperature, etc).
    5. Perform basic purification techniques.
    6. Date, label, and store supplies and/or reagents.
    7. Prepare materials for laboratory use.
2. Employ good laboratory practices while using instrumentation.
    1. Check laboratory equipment calibration.
    2. Operate laboratory equipment.
    3. Troubleshoot equipment using systems diagnostics.
    4. Perform or schedule preventive maintenance.
    5. Maintain equipment logs.
    6. Employ proper documentation for use of equipment.
3. Exhibit professional behaviors in all matters relating to laboratory working environment.
    1. Interact with colleagues.
    2. Follow oral and written directions.
    3. Work effectively in a group setting.
    4. Follow industrial and professional regulations.
4. Comply with college and laboratory affiliate departmental policies and procedures.
    1. Apply appropriate protocols.
    2. Maintain a laboratory notebook.
    3. Attend required training.
    4. Perform chemical waste disposal procedures.
    5. Comply with appropriate federal and state regulations.
    6. Comply with industrial and professional regulations.
5. Use critical thinking and problem solving skills in a laboratory setting.
    1. Use the scientific method in problem solving.
    2. Apply mathematics to experimentation.
    3. Set up experiments.
    4. Write or update protocols, standard operating procedures (SOPs), manuals, reports, or technical summaries.
6. Perform laboratory testing with appropriate time management expectations.
    1. Apply protocols, test procedures, or SOPs.
    2. Prepare glassware.
    3. Obtain, label, and prepare materials for testing.
    4. Calculate and prepare materials of appropriate composition.
    5. Categorize compounds, solutions, and materials for laboratory testing.
    6. Perform experiments/tests/assays.
    7. Return, archive, or dispose of test materials appropriately.
    8. Use time management skills.
7. Apply principles of safety and show competency with laboratory safety regulations.
    1. Identify first aid supplies, personnel, emergency protection areas, and evacuation plans.
    2. Comply with appropriate safety procedures, guidelines, and chemical hygiene plans.
    3. Comply with good laboratory practices.
    4. Operate fume hood safely.
    5. Employ proper techniques in the use, storage, and disposal of hazardous materials.
    6. Use appropriate personal protective equipment (PPE).
    7. Recognize safety symbols/signs.
    8. Choose and review appropriate safety data sheets (SDS/MSDS).
    9. Recognize common lab hazards, and observe procedures for the safe use of instruments and gas cylinders.
    10. Prepare a work area free from clutter.

Evaluation Criteria/Policies:
The grade will be determined using the Delaware Tech grading system:

90	–	100	=	A
80	–	89	=	B
70	–	79	=	C
0	–	69	=	F

Students should refer to the Student Handbook - https://www.dtcc.edu/handbook for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Final Course Grade:
Calculated using the following weighted average

Evaluation Measure	Percentage of final grade
Supervisor's Evaluation	50%
Faculty Evaluation(s)	25%
Student Logbook	10%
Work Experience Summary	15%
TOTAL	100%

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):
Chemistry Math Concentration

1. Apply knowledge of the theories and principles of chemistry.
2. Follow safety procedures.
3. Perform basic laboratory operations and techniques.
4. Keep a laboratory notebook following standard laboratory practices and present data in an organized written format.
5. Prepare common laboratory solutions.
6. Prepare and purify samples using common techniques.
7. Communicate in a professional manner.
8. Analyze samples by common qualitative and quantitative techniques.
9. Use and maintain common laboratory instruments and equipment.
10. Apply differential and integral calculus in the solution of problems.

Disabilities Support Statement:
The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the disabilities services - https://www.dtcc.edu/disabilitysupport web page or visit the campus Advising Center.