**Transcript for Virtual Tour of CEB labs**

Welcome to our virtual tour of the Chemical, Environmental and Biotechnology labs! These labs are located at Mohawk College - Fennell Campus.

Students enrolled in Chemical Engineering, Environmental Technician or Biotechnology Programs will participate in hands-on activities in these labs.

Let's get started!!!

**E303 - Physical Chemistry Lab**

Program area(s):

Environmental Technician

Courses:

* Air Quality and Climate Change
* Wastewater Treatment Technology
* Water Treatment Technology

Skill sets Learned:

Environmental students gain hands-on experience conducting tests to determine the quality and treatment of drinking water and wastewater. Additional skills learned are related to air pollution control and monitoring.

Welcome to E303!

* Depth filtration (Waste water treatment)
* Jar Tester (Water treatment)
* Real-time monitoring of air quality via GRIMM Weather Station (installed on roof)

**E304 - Organic Chemistry/Microbiology**

Program area(s):

* Chemical Engineering Technology
* Biotechnology (All streams)

Courses:

* Organic Chemistry 1 and 2
* Industrial Materials and Synthesis
* Microbiology, Cell Biology, Food Microbiology

Skill sets Learned:

Chem Eng students prepare and test Over-the-Counter (OTC) pharmaceuticals, identify unknown organic samples and complete a Capstone Project related to Organic Chemistry.

Biotechnology Students learn and refine micro skills such as aseptic technique, bacterial staining, perform tests on various food products and become familiar with the use of a microscope.

Chemical Engineering students will learn a variety of applications related to Organic Chemistry.

* Sample preparation, classification and identification by various tests and FTIR (Fourier Transform Infrared Technology).
* Sample purification via distillation.
* Complete a capstone project of their choosing. Shown here is a project using the PikaBrew System for Brewing Beer.

Biotech students will learn various microbiological techniques!

* Learn how to work aseptically with various bacterial strains. Prepare and use media for growing a bacterial strain of interest.
* Prepare bacterial slides and view under the microscope.
* Perform quality control tests on various food and beverage products.

**E305 - Chemical Analysis Laboratory**

Program area(s):

* Chemical Engineering Technology
* Biotechnology (All streams)
* Environmental Technician

Courses:

* Instrumentation 1 and 2; Analytical Chemistry 1 and 2
* Chemical Instrumentation and Analysis
* Sampling and Analysis

Skill sets Learned:

All students gain hands-on experience with instrumentation and lab skills relevant to process and quality control. Instrumentation used includes Gas Chromatography, Flame Photometry, Atomic Absorption and High Performance Liquid Chromatography.

* Atomic Absorption
* Flame Photometer
* Gas Chromatography
* High Performance Liquid Chromatography
* Gas Chromatography/Mass Spectrometer
* Auto Titrator

**E307 - Cell Culture and Research**

Program area(s):

Biotechnology - Advanced

Courses:

* Cell Culture Techniques
* On-going Research and Capstone Projects

Skill sets Learned:

Students gain hands on experience with techniques related to Cell Culture techniques by working with plant and animal cells. They also become familiar with fungiculture (growth and maintenance of fungi). Students can also apply to participate in Research projects with faculty leads in this space.

* Biological Safety Cabinet – for working aseptically with plant and animal cells
  + Animal Cells incubating
* Learn to use materials and equipment essential for Cell Culture Techniques
* Propagate and maintain fungal cultures by a variety of methods.
* Small scale anti-biotic production
  + No anti-biotics present to anti-biotic production
* Opportunities to participate in research projects with faculty. Shown here is the Hydroponics Unit which allows for growth of plants in the absence of soil.

**E309 - Biotechnology Lab**

Program area(s):

Biotechnology (All streams)

Courses:

* Biotechnology 1 and 2 (All streams)
* Drug Discovery and Analysis (Advanced only)
* Advanced Biotechnology (Advanced only)
* Advanced Biochemistry (Advanced only)

Skill sets Learned:

Students gain hands on experience with techniques related to the extraction and analysis of DNA and proteins via electrophoresis, PCR (polymerase chain reactions) and blotting.

Welcome to E309!

* Amplify DNA via Polymerase Chain Reaction (PCR) to allow for further identification of samples.
* Load and run DNA and Protein samples via Gel Electrophoresis.
* Capture images of DNA and Protein gels for further analysis.
* Use the Bioreactor to learn about Fermentation Applications.

**E327 - General Chemistry Lab**

Program area(s):

All program areas

Courses:

* Chemistry
* Analytical Chemistry

Skill sets Learned:

Students will learn basic lab skills such as accurately weighing samples, solution preparation and sample analysis via Flamephotometry and Spectrophotometry. These skills will be built on for two semesters.

Welcome to E327!

* Accurately weigh solids for sample and solution preparation.
* Prepare solutions and analyze them for a specific parameter (i.e. how much vinegar in a sample).
* Analysis of samples via Spectrophotometry…
* …and Flamephotometry

**E030 - Chemical Engineering Pilot Plant**

Program area(s):

All program areas

Courses:

* Chemical Engineering 1 and 2 (Chemical)
* Biotechnology Unit Operations and Bioengineering (Biotechnology)
* Industrial Waste Treatment (Environmental)

Skill sets Learned:

Students will gain hands on experience with the practical applications of chemical engineering unit processes including fluid transport, absorption, distillation, evaporation, treatment of industrial waste and biochemical processes.

Welcome to E030!

* Evaporator
* Fluid Flow
* Carbon Adsorption
* Plate Heat Exchanger
* Distillation Unit
* Large Scale Bioreactors

Thank you for viewing our tour. We hope to see you next semester!!!