

MJC Analytical Chemistry Technician Program
Meeting Minutes
October 3rd, 2023, Held via email and shared document

Members:

Name	Title
Linda Brzezinski	Chemistry Faculty MJC
Tara Bunag	Chemistry Faculty MJC
Joseph Caddell	Chemistry Faculty MJC
Gagan Dhaliwal	Chemistry Faculty MJC
Aman Duggal	Chemistry Faculty MJC
Arthur White	Chemistry Faculty MJC
Matt Page	Instructional Support Specialist
Laura Maki	Dean Science Division
Stephanie Barajas	Student MJC
Pete Mostoufi	Industry/JL Analytical
Mike Wolf	Industry/JL Analytical
Donna Keller	Industry/Geo Analytical Labs

Agenda: Feedback on developing an Analytical Chemistry Technician Certificate program.

Background: Email was sent out by Joseph Caddell to all the above members to provide feedback on 'Analytical Chemistry Technician Program' draft.

Discussion:

A live document was shared among all the Chemistry faculty and Lab IA. Edits were made to the live document which were then shared with all the above members to make comment on.

Below is the final draft that came out of the meeting with all the final edits. All the edits made are shown in red.

Analytical Chemistry Technician Certificate program

'Students will explore a wide range of tools and techniques used in analytical labs including spectroscopy, chromatography, titration and more. Students will be equipped with the knowledge to properly handle and troubleshoot modern instruments and interpret data which will enable them to work as a technician independently and as part of a team in an analytical lab. Students will learn how to use statistical methods to analyze data accuracy and uncertainty. Program also intends to train students to understand the role of a technician in a lab set up and develop soft skills to understand workplace dynamics"

1. Introduction to Analytical Chemistry:

Overview of analytical chemistry and its importance in various industries.

Basic principles of analytical chemistry, including qualitative and quantitative analysis.

2. Laboratory Safety and Ethics:

Importance of safety in the laboratory environment.

Handling hazardous materials, waste disposal, and emergency protocols.

Ethical considerations in analytical chemistry research and practice.

3. Laboratory Techniques:

Proper use of laboratory equipment and instruments.

Techniques for sample preparation, handling, and storage.

Introduction to a chain of custody from sampling to final report

Calibration and validation of instruments including troubleshooting

Appropriate use of database search to obtain theoretical and technical information about analytical techniques.

4. Analytical Methods:

Introduction to common analytical methods: spectroscopy, chromatography, titration, etc.

Selection of appropriate methods for different types of samples and analytes.

5. Quality Control and Assurance:

Principles of quality control and quality assurance in analytical chemistry.

Basic statistical methods to assess the quality of data including, but not limited to average, median, percent error, standard deviation, variance, significant figures, uncertainty, detection limits, etc. for data analysis and interpretation.

6. Spectroscopic Techniques:

UV-Vis spectroscopy, IR spectroscopy, NMR spectroscopy, ICP-OES, Mass spectrometry, and their applications.

7. Chromatographic Techniques:

Gas chromatography (GC) and liquid chromatography (LC) principles.

High-performance liquid chromatography (HPLC) and gas chromatography-mass spectrometry (GC-MS).

8. Titration Techniques:

Titration, standard solutions, equivalence points, end point, volumetric calculations, pH indicator etc.

9. Interdisciplinary Application:

Application of the above techniques in other disciplines including, but not limited to Biochemistry, Biotechnology, Environmental Science and toxicology etc.

10. Sample Analysis and Data Interpretation:

Hands-on practice in performing analyses on various samples.

Interpretation of analytical data and reporting results accurately.

Composing lab reports that summarize methods and report data for interpretation.

11. Environmental and Food Analysis:

Techniques for analyzing environmental pollutants and contaminants.

Food safety analysis and detection of additives or contaminants.

12. Pharmaceutical Analysis:

Analytical techniques for pharmaceutical drug analysis.

Good Manufacturing Practices (GMP) and quality control in the pharmaceutical industry.

13. Instrumentation and Software:

In-depth understanding of analytical instruments and their components.

Introduction to data analysis software and instrument control interfaces.

Introduction to a LIMS (Laboratory Information Management System)

14. Professional Development:

Communication skills for presenting results and writing reports.

Networking opportunities and staying updated with the latest advancements.

15. Capstone Project:

A practical project where students apply their knowledge to solve real-world analytical challenges.

Presentation of findings and conclusions.

Ability to modify and develop methods to solve new problems.

16. Internship/Practical Training:

Hands-on experience in a professional analytical laboratory setting.

Application of skills learned in a real-world context.

17. Soft Skills and Professionalism:

Time management, teamwork, critical thinking and adaptability skills.

Understanding workplace dynamics and ethics.

Notes/comments: Comments were made on Math program to go along with the chemistry analytical technician program with possibility of math instructor teaching a math course tailored for chemistry program. The committee approved the program and recommended the program to move forward for final approval.

Minute taker: Aman Duggal