(English follows)

Madame, Monsieur,

Le programme de Chimie Analytique - Techniques de Laboratoires du Collège Dawson est un Diplôme d'Études Collégiales de trois ans qui prépare les étudiants au poste de Technicien dans les laboratoires dans l'industrie chimique. Pendant trois ans, les étudiants acquièrent des connaissances pour effectuer des tâches de laboratoire et effectuer des analyses techniques, en appliquant les bonnes pratiques de laboratoire et en accord avec les normes GLP.

Une partie cruciale de ce programme consiste à envoyer nos meilleurs étudiants en stage industriel à la fin de leur deuxième année d'études. Ce stage leur permet de se familiariser avec leur environnement de travail et de mettre en action leurs connaissances dans un contexte industriel. Le stage est non-rémunéré, et peut durer jusqu'à 150 heures. La plupart des étudiants souhaitent continuer leur stage (rémunéré) pendant l'été.

Une autre forme de stage est l'Alternance Travail Études (ATE). Dans ce programme, les étudiants-internes réalisent deux périodes rémunérées en entreprise, en général l'été, en alternance avec leurs études. Chaque stage est à temps plein et dure de 8 à 16 semaines et l'entreprise bénéficie d'un rabais d'impôt.

Bien entendu, vous avez toute liberté pour le choix de l'étudiant et les travaux qu'il pourra effectuer. Nous vous demandons de lui fournir la formation nécessaire afin qu'il s'intègre dans votre équipe de laboratoire. A la fin du stage, nous aurons simplement besoin d'une évaluation sur sa performance.

Vous trouverez plus d'information au sujet de notre programme et les stages ATE dans la documentation jointe (en anglais). Au nom de tous les étudiants et des professeurs, je vous remercie pour l'intérêt que vous pourrez porter à notre programme et à ses opportunités de stages. N'hésitez surtout pas à me contacter si vous avez des questions le programme, les types de stages ou les candidatures.

Salutations cordiales,

Nicolas Duxin

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Program and Internship Coordinator
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Dear Madam, dear Sir,

The Laboratory Technology – Analytical Chemistry Program at Dawson College is a three-year DEC program that trains the students to work in industrial chemical laboratories. The students acquire skills to perform basic laboratory operations and to carry out manual and instrumental chemical analysis as well as microbiological testing. They are trained in GLP compliance, and also in applying safe work practices. More information about the program can be found on the program brochure attached.

As a vital part of the program, the students with good academic standing after their fourth-term of studies are required to conduct a four weeks industrial internship. It is to allow the students to become familiar with the work environment, and to apply their skills in industrial settings. The internship is non-remunerated, and its duration can last up to 150 hours, or be as brief as 60 hours. However, many of our students prefer to conduct a longer internship, beginning in May and working throughout their spring/summer break (*i.e.* average 12 weeks) to obtain a more enriching work experience.

Another form of internship is the work-study stage (or Alternance Travail-Études, ATE). In this stage, student-Interns complete two (2) remunerated practicums in companies, alternating with their studies. Each practicum consists of a working period (8 to 16 consecutive weeks – 28 to 40 hours per week - minimum of 224 working hours per practicum) during which a Student-Intern completes his academic training. You will find more information about the ATE in the attached document.

We welcome the internship host to decide on the student(s) applying and the types of work/tasks for the student intern(s). We ask you to provide necessary training and guidance to the students to become a productive member of your laboratory team, as if they are part of the work force. At the end of internship period, we also ask you to complete an evaluation of the student's performance.

On behalf of the students and the faculty, I sincerely thank you for your consideration of our program and potential internship opportunities. Should you have any questions regarding the program, the internship, or the student applying, please do not hesitate to contact me.

Sincerely,

Nicolas Duxin

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DAWSON COLLEGE

LABORATORY TECHNOLOGY – ANALYTICAL CHEMISTRY PROGRAM

SKILLS LIST FOR AN INTERN FOR THE 1ST PRACTICUM

GENERAL KNOWLEDGE & SKILLS

- Safe work practices in chemical laboratory
- Keeping laboratory notebook
- Basic understanding of GLP
- Using SOPs
- General chemistry, chemical reactions, stoichiometry, equilibrium, kinetics, thermodynamics
- Statistical treatment of analytical data
- Safe use of compressed gas cylinders
- Ability to work precisely and accurately.

WET CHEMISTRY TECHNIQUES

Solution Preparation

- Proper weighing
- Drying of solids and using a desiccator
- Quantitative transfer
- Dissolution
- Using volumetric glassware
- Preparing buffer solutions
- Measuring pH.

Volumetric Analysis

- Manual titration
- Using autotitrators.

Gravimetric Analysis

- Drying a precipitate to a constant weight
- Combustion using crucibles
- Safe use of a laboratory burner.

Sample Preparation

- Dissolution
- Use of separatory funnel
- Filtering.

INSTRUMENTAL TECHNIQUES

UV-Vis Spectrophotometry

- Proper selection of analysis wavelength
- Chemical analysis using Beer's law.

Basic HPLC

- Preparation and degassing of mobile phase
- Starting up the instrument:
  - Setting flow rate
  - Priming the pump and purging the lines
  - Setting the detection wavelength
  - Equilibration of column
  - Manual injection
  - Shutting down the instrument: column flushing with proper solvent mixture.

Basic GC

- Setting injector, detector (FID), and column temperatures
- Proper manual injection technique
- Starting up and shutting down the instrument.

DAWSON COLLEGE

LABORATORY TECHNOLOGY – ANALYTICAL CHEMISTRY PROGRAM

SKILLS LIST FOR AN INTERN FOR THE 2ND PRACTICUM

GENERAL KNOWLEDGE & SKILLS

- Safe work practices in chemical and microbiological laboratory (WHMIS)
- Keeping laboratory notebook
- Basic understanding of GLP, ISO, GMP
- General chemistry, stoichiometry, equilibrium, kinetics, thermodynamics
- Organic chemistry, structures, nomenclature, stereochemistry, synthetic routes, reaction mechanisms
- Statistical treatment of analytical data including using Excel and Excel Solver
- Safe use of compressed gas cylinders
- Ability to work precisely and accurately.

WET CHEMISTRY TECHNIQUES

Solution preparation
- Proper weighing
- Drying of solids and using a desiccator
- Quantitative transfer
- Dissolution
- Using volumetric glassware
- Preparing buffer solutions
- Measuring pH.

Volumetric analysis
- Manual titration
- Using autotitrators.

Gravimetric analysis
- Safe use of a laboratory burner with crucibles.

Sample preparation
- Dissolution, filtering
- Liquid-liquid extraction, soxhlet extraction, solid-phase extraction, headspace extraction
- Wet digestion methods, dry ashing
- Sampling theory
- Quality assurance and quality control.

INSTRUMENTAL TECHNIQUES

UV-Vis Spectrophotometry
- Proper selection of analysis wavelength
- Chemical analysis using Beer's law
- Instrument performance verification
- Matrix correction methods using a photodiode array detector.

AAS and FES
- Flame atomization
- Proper selection of analysis wavelength
- Instrument set-up and analysis parameter optimization
- Quantitative analysis.

Fluorometry
- Determination of excitation and emission wavelengths
- Effect of sample matrix on fluorescence
- Quantitative analysis.

IR and FTIR spectroscopy
- Solid and liquid sample preparation
- Transmittance, ATR, diffuse reflectance
- Organic structure determination, qualitative analysis
- Quantitative analysis.

HPLC
- Preparation and degassing of mobile phase
- Starting up the instrument:
  - setting flow rate
  - priming the pump and purging the lines
  - setting the detection wavelength
  - equilibration of column
  - changing the column
- Proper manual injection, injection with autosampler
- Selection of mobile and stationary phases, gradient elution
- Shutting down the instrument and column flushing with proper solvent mixture.

GC & GC-MS
- Setting injector, detector (FID and TCD), and column temperatures
- Proper manual injection, injection with autosampler
- Starting up and shutting down the instrument
- Effect of instrument parameters on separation
- Qualitative analysis using MS, quantitative analysis.

Capillary Electrophoresis
- Setting instrument parameters
- Optimization of separation
- Quantitative analysis.

Microbiology
- Preparation of culture media
- Proper use of a microscope.