

**Metropolitan State College of Denver**  
**Department of Chemistry – Criminalistics Program**

**Chemistry 4700 & 4710: Criminalistics Internship I and II**

**Time & Location:** Internship sites/MSU Denver; August 17 – December 4, 2015

**Course Title:** Criminalistics Internship I/Criminalistics Internship II

**Credit Hours:** 5 and 3, respectively

**Contact Hours:** Lecture: 0 hours, Lab (on-site): 225 and 135 hours, respectively

**Restrictions:** Candidates must pass background check, including polygraph as required

**Prerequisite:** CHE 3710

**Professor:** Dr. Megan Filbin-Wong

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**Office Hours:** Office Hours: M-W 10-11a, Th 9:30-11:30a, or by appointment

**Course Description:**

The B.S. in Chemistry with a Concentration in Criminalistics requires 3 – 8 semester hours of internship. This is usually taken as 5 or 3 hrs each in two consecutive semesters (4700 and 4710, respectively). However, it is possible to take 8 hrs in one semester if the institution providing the internship agrees to make this option available. The purpose of the internship is to provide practical experience in a functioning laboratory and to enable the student to interact with practicing professionals. The experience will also expose the student to the expectations of the employer for punctuality, dependability, discretion and confidentiality.

The student may be assigned to a research project or may be placed in an operating unit at the discretion of the agency. (This should be explored at the interview stage). The expectation of the Program is that the experience should be relevant to the student's career goals as a Forensic Scientist and/or Crime Scene Investigator and that the student should be of benefit to the employing organization. Internships should not be offered for 4700 or 4710 credit if the student will be assigned essentially clerical or custodial duties, however such duties can be expected to the extent that scientists and investigators within the employer's system perform these tasks.

The student's grade in CHE 4700 and 4710 will be based on providing a satisfactory notebook and journal and on the recommendation of the employer, including completion of required hours. Student grades in CHE 4710 will be based on all of the above as well as satisfactory performance on the ACS DUCK exam in chemistry and a satisfactory paper and oral presentation.

**Specific Requirements of the Employer:**

1. To provide a safe working environment free from discrimination and/or harassment.
2. To insure that the intern performs the required amount of hours of service.

3. To provide relevant experience.
4. To provide an evaluation of the student's performance on the form provided.

### **Specific Requirements of the Intern (student):**

1. Must document 45 hours of work for each credit hour (via lab notebook and journal).
2. Must keep a written lab notebook. See guidelines below.
3. Must write a typed journal of experiences. See guidelines below. Early feedback will be provided if the journal is submitted for review at any time during the semester. You may submit the journal by email using your name and the date in the filename. The employer may also review the journal at the employer's discretion.
4. For the 4710 internship, a final written paper and seminar presentation of that paper is required. The presentations will be given during the last full week of the course (**November 30 December 4th, actual date and time TBD**) and the paper will be turned in at that time. The paper/presentation topic may be a case that the student worked on or a topic/experiment/ validation that the student worked on routinely during the course of the internship. Alternately, the paper and presentation may comprise a historical study of a technique or analysis used in the field of forensic science with approval of the instructor. In the case of a research project, the paper and presentation will focus on the background, methods and results of the student's project. **All papers will be written in the format of *Journal of Forensic Sciences*.** See guidelines for papers and presentations below.
5. In the case of 4710, the student will successfully take/pass the ACS DUCK Exam during finals week or earlier (by **Friday, December 4, 2015** at the latest).
6. Weights for assessment: CHE 4700: Internship site supervisor review: 60%, Notebook: 20%, Journal: 20%; CHE 4710: Internship site supervisor review: 40%, Notebook: 5%, Journal: 5%, Paper: 25%, Presentation: 20%, ACS DUCK exam: 5%.

### **Guidelines for Lab Notebooks (Internships I and II)**

The notebook should be a record (bound pages) in INK showing dates, hours per day and experiences for each day, as well as observations from the internship work. All experiments and reagents should be explained in sufficient detail so that other scientist could accurately replicate your work. Accuracy is important. This will form the basis for a typed synopsis of dates and work assignment and for typed reports on what the student has learned (organized by topic not dates). Dr. Filbin-Wong will review the notebook after completion of the course, but early feedback will be provided if the notebook is submitted for review.

### **Guidelines for Journals (Internships I and II)**

The journal is the student's typed documentation of reagent recipes, methods, procedures, data and observations from the research, case studies and/or validation studies that the student worked on over the course of the internship. It should document methods, procedures and observations in sufficient detail that the student can reproduce the experiment or test or can recall the observation at a later date. The contents of the journal are as follows: 1) title page, 2) brief (one sentence) summary of work done followed by a table of contents, 3) list of cases or work done by date (taken from your notebook), 4) step-

by-step protocols (for preparing solutions, using instrumentation, data collection, analysis/interpretation, etc.), and 5) data collected during the research project/case studies/validation studies (spectra, pictures, etc.). Protocols may include the use of instruments (IR, NMR, GC-MS, microscopes, CE, X-ray, etc.), evidence collection, securing a crime scene, conducting an autopsy, calibrating instruments, etc. If you work on one protocol, you may continually revise and insert if/then statements for appropriate deviations based on different cases. If you work in many areas, you may have many protocols. The protocol should be in step-by-step instruction format that another person could use to perform the method without further documentation. The protocol should include both how to collect the data and how to interpret the spectra or data after it is collected with any caveats or special considerations. Include references of books or databases that are used in the interpretation. The title page should include your name, the internship dates, your institution (MSU Denver), and the site and supervisor of the internship. Journals should be typed using a word processor and maintained in a 3-ring binder or folder. Journals will be accepted by email. If using email, please use your last name and the date in the filename.

### **Guidelines for Papers (Internship II)**

An end-of-semester paper is required from you as part of your internship experience. While it is preferred that the paper topic relates to your internship experience, this is not required. If desired, your instructor will guide you in selecting a topic based on your internship experience. This report should be written in the format of a scientific research article from the *Journal of Forensic Sciences* (<http://www.aafs.org/info-for-authors/preparation-manuscript>; **Note: You do NOT need to put the paper into the two-column format**). If the format is not followed, the paper will be returned to the student without a grade for reformatting and resubmission or points will be deducted. The paper should include your name and affiliation, an abstract, an introduction of the case or research project with a literature review of at least 10 journal or book references, a materials and methods section, a discussion section (presentation and analysis of your research results or historical results or comparative accounts of case studies, etc.) and your conclusion(s). The introduction should be as complete as possible with references to specific, *related* studies in the field. The studies chosen as references should be pertinent for your methods or for direct comparison to the current study. Your results should be compiled and organized in tables and graphs using MS Excel or an alternative graphing/spreadsheet program. If you obtain results from a previously published study for comparison or discussion, you should retype them in a graph/spreadsheet program and reference the source appropriately. In the conclusion, you should describe the next steps (aka future directions) that are ongoing and/or those that you would recommend. The length may vary; however the papers you submit should be of a very high quality. I am happy to read drafts submitted well in advance of the deadline and give suggestions for improvement. Papers will be accepted by email. If using email, you please include your last name and the date in the filename.

Always **reference** ideas, statistics and facts if they are not your own according to the guidelines of the *Journal of Forensic Sciences*. Failure to do so is plagiarism. **Please**

**do not use websites as references.** Wikipedia is an acceptable place to start, but ALWAYS go to the original source for the information.

**Some pertinent forensic journals**

*Forensic Science Communications*

*Journal of Forensic Sciences*

*Forensic Science International*

*International Journal of Legal Medicine*

*Analytical Chemistry*

*Journal of Analytical Toxicology*

*American Journal of Forensic Medicine and Pathology*

*Canadian Society of Forensic Science Journal*

*Forensic Science Review*

*Journal of Forensic Identification*

*Information Bulletin for Shoeprint/Toolmark Examiners*

**Guidelines for Presentations (Internship II)**

The presentation should be based on the submitted paper. It should be ~20 minutes in length and be prepared using PowerPoint and/or another kind of visual aid. You should brief your audience on the research, case or validation study, significance of this study, methods and materials you used, results including presenting the original data and figures, and the conclusions that were reached. You should be prepared to answer questions from the audience, which may include your peers, your internship site supervisor (if possible), and other members of the department.

**Site Visits**

Dr. Filbin-Wong may conduct one site visit during the internship period. The visit should take no more than 1 hour, during which Dr. Filbin-Wong will (1) talk with you about your project/daily tasks and, if possible, observe you working, (2) review your notebook and (3) speak with your supervisor about your performance. Dr. Filbin-Wong will contact you during the latter half of the semester to schedule a site visit.