

## **DEPARTMENT OF CHEMISTRY**

### **Bachelor of Arts CHEMISTRY MAJOR (Forensic Science Option)**

The Forensic Science option includes courses recommended by the American Academy of Forensic Sciences for undergraduate forensic science degree programs, and will provide the minimum educational background for a career as a forensic chemist. Students completing this degree program will be prepared to pursue employment in chemistry and forensic chemistry, as well as graduate studies in chemistry.

#### **FACULTY ADVISORS:**

Dr. Mohammed Ali, Dr. Marcus Bond, Dr. Sharon Coleman, Dr. Philip Crawford, Dr. Matthew Fasnacht, Dr. Bruce Hathaway, Dr. James McGill, Dr. Bjorn Olesen, Dr. Michael Readnour, Dr. David Ritter, Dr. Michael Rodgers

#### **CAREER OPPORTUNITIES:**

B.A. chemists employed by government or private industry are typically involved in research, product development, synthesis, forensic analysis, quality control, industrial hygiene and safety, or testing for environmental regulation compliance. Many B.A. chemists tend to go into technical management, marketing, or sales (e.g. pharmaceuticals, chemicals, and instruments). Some use their computer skills in information retrieval, computer modeling, process automation, and software development and evaluation. Others may use their writing skills to become technical writers.

Forensic scientists typically work in crime laboratories run by city, county, or state governments, or for Federal agencies such as the FBI, Drug Enforcement Administration (DEA), Bureau of Alcohol, Tobacco, and Firearms (ATF), and U.S. Postal Inspections.

#### **EMPLOYMENT OUTLOOK:**

According to Chemical and Engineering News, forensic chemistry, particularly DNA analysis, is on the verge of explosive growth. It is predicted that 10,000 new forensic scientists will be needed over the next decade to address the expanding backlog of DNA evidence alone. The median starting salary for BA chemists was around \$33,000 according to the ACS 2004 salary survey. (ACS data shows a direct relationship between GPA and starting salaries for BS chemists, i.e. those with higher GPA's generally start at higher salaries.) The median salary for all employed BS chemists was \$59,700 according to the ACS 2003 salary survey.

#### **HIGH SCHOOL PREPARATION FOR MAJOR:**

Ideal: 4 units English, 3 units of Science (Biology, Chemistry, Physics), and Math through Trigonometry and Pre-calculus.

## Requirements for BA Chemistry Major – Forensic Science – No Minor Required

	<u>Credit Hours</u>
<b>University Studies Core Curriculum</b>	<b>30*</b>
The University Studies Core Must include:	
Living Systems: BI151 Biological Reasoning	
Oral Expression: SC105 Fundamentals of Oral Communication	
<b>UI-100 First Year Seminar</b>	<b>3</b>
<b>University Studies Interdisciplinary Courses</b>	<b>6*</b>
The University Studies Interdisciplinary Courses Must Include:	
UI331 Biochemistry I (CH342)	
<b>Required Courses (pre-requisites)</b>	<b>41</b>
CH185/005/085 General Chemistry I (MA095 or equiv)	5**
CH186 General Chemistry II (CH185)	3
CH187 Qualitative Analysis (CH186 pre or co)	2
CH271 Quantitative Analysis (CH187), offered Fall only	4
CH341 Organic Chemistry I (CH186)	4
CH342 Organic Chemistry Laboratory I (CH341 pre or co)	1
CH310 Introduction to Physical Chemistry (MA 139,CH271, PH121 or PH230), offered Fall only	5
CH498 Professional Presentation in Chemistry (UI443)	1
MA139 Applied Calculus (MA134 or equiv.)	3**
PH120/020 Introductory Physics I (MA133 and MA134 or equiv.)	5
PH121/021 Introductory Physics II (PH120)	5
UI443 Professional Experience in Chemistry, offered Spring only	3**
<b>Other Chemistry Requirements</b>	<b>3</b>
CH343 Organic Chemistry II (CH342 pre or co)	3
<b>Forensic Science Component</b>	<b>17-18</b>
CJ100 Introduction to Criminal Justice	3
CH420 Forensic Chemistry (CH342)	4
CJ350 Evidence Collection and Preservation (CJ330, 5 hours of nat. science)	3
FS550 Crime Laboratory: Microscopy (CH344 or consent of instructor)	2
FS552 Crime Laboratory: Blood and Fluids (CH344 or consent of instructor)	2
Take one of the following courses:	
CH575 Chemical Instrumentation (CH310 with consent of instructor)	4
<b>OR</b>	
EV460 Introduction to Toxicology (CH343)	3
<b>Electives</b>	<b>19-20</b>
EN100 English Composition	0-3
<b>Minimum Degree Requirement</b>	<b>120</b>

\*Does not include hours for University Studies courses included in core curriculum.

\*\*University Studies course

**Notes:**

1. Required courses offered in both fall and spring semesters unless otherwise specified.
2. Completion of an experiential learning project (undergraduate research, internship) in the major is required of all graduates. Requirement met by completion of CH498 Professional Presentation in Chemistry. Consult with your departmental advisor.

**B.A. in Chemistry**  
**(Forensic Science Option)**  
**Suggested 8 Semester Sequence<sup>♦</sup>**

First Semester	Hrs.	Second Semester	Hrs.
UI100 First Year Seminar	3	CH186 General Chemistry II	3
CH185 General Chemistry I Lecture	5	CH187 Qualitative Analysis	2
CH085 General Chemistry I Lab.	+	University Studies Electives	6
CH005 General Chemistry I Rec.	+	EN140 Rhetorical & Critical Thinking	3
MA139 Applied Calculus	3	Electives	3
EN100 English Comp.	3		
Third Semester*	Hrs.	Fourth Semester	Hrs.
CH271 Quant. Analysis	4	CH341 Organic Chemistry I	4
PH120 Intro. Physics I Lecture	5	CH342 Organic Chemistry Lab I	1
PH020 Intro. Physics I Lab	+	PH121 Intro. Physics II Lecture	5
University Studies Electives	3	PH021 Intro. Physics II Lab	+
Electives	3	University Studies Electives	6
Fifth Semester	Hrs.	Sixth Semester	Hrs.
CH310 Introduction to Physical Chemistry	5	UI443 Prof. Experience in Chemistry	3
University Studies Electives	6	University Studies Elective	6
CH343 Organic Chemistry II	3	Elective	6
		WP003 75 Hour Writing Exam	0
Seventh Semester	Hrs.	Eighth Semester	Hrs.
CH420 Forensic Chemistry	4	CH498 Prof. Presentation in Chemistry	1
UI331 Biochemistry I	3	CH575 Chemical Instrumentation	4
FS550 Crime Lab I: Microscopy	2	CJ350 Evidence Collection and Preserv.	3
CJ100 Introduction to Criminal Justice	3	FS552 Crime Lab II: Blood and Fluids	2
UI3XX University Studies	3	Electives	4
		OR	
		EV460 Introduction to Toxicology	1
		CH498 Prof. Presentation in Chemistry	3
		CJ350 Evidence Collection and Preserv.	3
		FS552 Crime Lab II: Blood and Fluids	2
		Electives	5

<sup>♦</sup>Assumes all prerequisites have been met for each course.

\*Since all chemistry courses numbered 200 and above may only be offered one semester a year, it is strongly recommended that all chemistry majors consult with a chemistry staff member before the end of their freshman year.