What is Biochemistry?
Biochemistry is the study of the molecules and chemical reactions of life. The defining feature of biochemistry is that it uses the principles of chemistry to explain biology at the molecular level. Biochemistry is a relatively new area, less than a hundred years old, but advances are occurring at a remarkable rate for several reasons:
1. We now understand many central processes of life. These discoveries include the structure of DNA and the flow of information, the unraveling of central metabolic pathways, and the structure and function of many proteins.
2. We now understand molecular patterns which are common to diverse expressions of life in simple and complex organisms, including plants and animals.
3. We now understand molecular causes of many diseases and this helps in the diagnosis and treatment of many health problems.

Understanding biochemical concepts and techniques enables researchers to attack fundamental problems in biology and medicine. Some of these might include how a fertilized egg gives rise to cells as different as muscle, brain or liver; how cells communicate in a complex organism; how the growth of cells is controlled; and how genetic engineering can be applied?

Biochemistry at UW-Platteville
The four-year degree program at UW-Platteville leading to a Bachelor of Science in chemistry with a biochemistry emphasis provides the graduate with the appropriate chemistry/biology/biochemistry background to succeed in bachelor level positions or in graduate/professional schools.

The student in this program is required to take courses in the major areas of chemistry – general, inorganic, organic, analytical and physical chemistry as well as seven credits of biochemistry. All chemistry majors are required to take one year of general physics and at least two semesters of calculus. For the biochemistry emphasis, students replace some of the theoretical courses in chemistry with courses which include either botany or zoology, microbiology and one of the following: cell biology, genetics, biotechnology or immunology.

The Faculty
The University of Wisconsin-Platteville has 12 full-time chemistry faculty with specialties in analytical chemistry, biochemistry, organic chemistry, inorganic chemistry, nuclear and physical chemistry. Advanced chemistry classes are kept small to ensure that there is considerable opportunity for interaction with instructors who are dedicated to providing sound, balanced instruction. The chemistry program is accredited by the American Chemical Society.

Facilities
Chemistry is located in Ottensman Hall, a modern air-conditioned facility with well-equipped laboratories. Instrumentation includes FT-IR spectrometers, UV-VIS spectrometer, gas chromatograph-mass spectrometer, high pressure liquid chromatograph, fluorimeter, atomic absorption spectrometers, NMR, capillary electrophoresis analyzers and equipment, and lasers. A variety of other modern instrumentation is available for student use, both as part of coursework or in undergraduate research. All laboratories are networked for computer transferral of data and a chemistry computer laboratory is available.

Student Activities
Students in the biochemistry program at UW-Platteville participate in the Alchemists, an active student affiliate of the American Chemical Society. In addition to social events, alchemists’ activities include field trips, chemical demonstrations at area elementary schools, and presentations by and informal discussions with visiting industrial and academic chemists.

Career Opportunities
Careers in the health fields will always be available, especially as new data leads to better diagnosis and treatment. An undergraduate degree in chemistry with a biochemistry emphasis will provide preparation for professional programs in human medicine, veterinary medicine, pharmacy and dentistry, as well as provide the background for graduate programs in any of the life sciences. There are positions at the bachelor’s level in laboratories doing research, product development or quality control, as well as sales, marketing and information providers. Workers in the environmental fields would also be served by this program. The growth in biotechnology companies is also expected to increase the number of positions available.

(Pubs 12-0608 Revised—09/5/12)
Scholarships
A number of scholarships are available to students in the biochemistry program including the Glen V. Gundy, Gerald F. Richards, Robert Hansen and Chemistry Faculty Emeriti Scholarships. Students may also be eligible for other college and university scholarships.

Recommended High School Courses
Student success is enhanced when students take the maximum number of courses in mathematics, biology, chemistry, physics and English. UW-Platteville offers test-out examinations for students with advanced preparation.

For More Information
For more information about the biochemistry program at UW-Platteville, write the chair at the Department of Chemistry and Engineering Physics, UW-Platteville, 1 University Plaza, Platteville WI 53818-3099; or call 608.342.1651; or fax 608.342.1559 or e-mail chemistry@uwplatt.edu; or consult the website at http://www.uwplatt.edu/chemep/.

The University of Wisconsin-Platteville does not discriminate on the basis of age, race, creed, color, handicap, sex, sexual orientation, developmental disability, national origin, ancestry, marital status, arrest record or conviction record.

Suggested Course of Study
Students in the biochemistry program considering graduate work in biochemistry are recommended to take additional elective coursework in chemistry as well as additional semesters of calculus and calculus-based physics.

First Year
First semester
CHEM 1140 General Chemistry I 4
ENGL 1130 Freshman Comp I 3
MATH 2530 Trig and Analyt. Geometry 3
BIOL 1350/1450 Botany/Zoology 5
15

Second Semester
CHEM 1240 General Chemistry II 4
ENGL 1230 Freshman Comp II 3
MATH 2640 Calculus and Analyt. Geom I 4
BIO 3240 Microbiology 4
15

Second Year
First Semester
CHEM 3510 Organic Chemistry lab 1
CHEM 3540 Organic Chemistry 4
PHYS 1110 Physics I lab 1
PHYS 1240 Physics I lect 4
MATH 2740 Calculus and Analyt. Geom. II 4
SPCH 1010 Public Speaking 2
16

Second Semester
CHEM 3610 Organic Chemistry lab 1
CHEM 3630 Organic Chemistry 3
PE 1000 Fitness Assessment 1
PHYS 1210 Physics II lab 1
PHYS 1240 Physics II lect 4
General Education Requirements 6
16

Third Year
First Semester
CHEM 2730 Inorganic Chemistry 4
BIO 3330 Genetics 3
PE Activity 1
Electives and Gen. Ed. Requirements 8-9
16-17

Second Semester
CHEM 4630 General Biochemistry 3
CHEM 4610 Biochemistry Lab 1
CHEM 4060 Seminar Audit 0
CHEM 2150 Quantitative Analysis 4
Electives and Gen. Ed. Requirements 6
14

Fourth Year
First Semester
CHEM 4830 Biochemistry Topics 3
CHEM 4130 Physical Chemistry I 3
CHEM 4000 Research 1
CHEM 4110 Physical Chemistry I Lab 1
Gen. Ed. Requirements 6
CHEM 4910 Advanced Biochem. Lab 1
15

Second Semester
CHEM 4240 Instrumental Analysis 4
CHEM 4060 Seminar 1
Gen. Ed. Requirements 9
CHEM 4000 Research 1-3
15-18