

# PRE-PROFESSIONAL PROGRAMS

The Fisher College of Science and Mathematics offers pre-professional preparation in medicine, dentistry, pharmacy and veterinary medicine. The programs are described below.

## Premedical/PreDental Program—Undergraduate

*Undergraduate PreMedical/PreDental Committee Chair:* Dr. Laura Martin

Smith Hall 269-B  
Phone: 410-704-3043  
Email: premed.predent@towson.edu

Students who are interested in careers in medicine or dentistry must keep the following facts in mind during their studies:

1. Students must have an outstanding academic record in all the courses they take—science and otherwise—to be competitive for admission to medical or dental school.
2. The B.S. or B.A. degree may be in any discipline, but most students get their degrees in one of the sciences. However, all students must take the science courses that are required by the professional schools and listed under Required Courses below.
3. Students interested in medical or dental school usually take the Medical College Admission Test (MCAT) or the Dental Aptitude Test (DAT) one to one and one-half years in advance of entering professional school. Both tests are computerized and are given throughout the year. Students are strongly urged to prepare for the MCAT or DAT, either on their own or by taking a commercial preparation course.
4. Letters of recommendation are required, and at Towson University these letters are prepared by the PreMedical/PreDental Committee.
5. Careful planning and organization on the part of the student are absolute necessities.

Information should be obtained from the PreMedical and PreDental Committee before or upon entering Towson University.

## Requirements for Admission to Medical or Dental School

A student must have an outstanding undergraduate record to be competitive for admission to medical or dental school. Criteria used by professional schools to evaluate applicants include:

1. academic achievement with emphasis on performance in biology, chemistry, mathematics and physics
2. scores on the Medical College Admission Test (MCAT) or Dental Admission Test (DAT)
3. motivation to pursue a career in medicine or dentistry
4. clinical and research experience
5. participation in extracurricular activities and community service
6. interview with members of the medical or dental school admissions committee
7. letter of recommendation prepared by the applicant's undergraduate Premedical/PreDental Committee

Letters of recommendation written by the Towson University PreMedical/PreDental Committee are based upon evaluation of Items 1–6 above as well as letters of evaluation obtained by students from science faculty of their choosing and an interview with members of the committee.

Although educational philosophies and specific undergraduate course requirements differ among the nation's medical and dental schools, these institutions recognize the value of a broad-based undergraduate education including a strong foundation in the natural sciences (biology, chemistry, physics and mathematics), well-developed communication skills, and a solid background in the humanities and social sciences.

## Required and Recommended Science Courses

Premedical and PreDental students, regardless of major, must take the required courses as part of their curriculum. Students are also advised to take as many of the highly recommended courses as possible as these courses should help improve their performance on the MCAT or DAT exams.

### Required Courses (34 units)<sup>1</sup>

*These courses are almost always required by medical and dental schools.*

Code	Title	Units
BIOL 200 & 200L	INTRODUCTION TO CELLULAR BIOLOGY AND GENETICS [LECTURE] and INTRODUCTION TO CELLULAR BIOLOGY AND GENETICS [LAB]	4
BIOL XXX	Elective	4
CHEM 131 & 131L	GENERAL CHEMISTRY I LECTURE and GENERAL CHEMISTRY I LABORATORY	4
CHEM 132 & 132L	GENERAL CHEMISTRY II LECTURE and GENERAL CHEMISTRY II LABORATORY	4
CHEM 331	ORGANIC CHEMISTRY I	5
CHEM 332	ORGANIC CHEMISTRY II	5
PHYS 211	GENERAL PHYSICS I; NON CALCULUS-BASED <sup>2</sup>	4
PHYS 212	GENERAL PHYSICS II; NON CALCULUS-BASED <sup>2</sup>	4
Total Units		34

<sup>1</sup> All of the required courses should be completed before taking the MCAT or DAT exams. Some medical schools also require calculus and/or other specific courses. Many dental schools now require a biochemistry course. Students should determine the admission requirements of the schools they are especially interested in attending.

<sup>2</sup> PHYS 241 and PHYS 242, both of which require calculus, may be taken in place of PHYS 211, PHYS 212. PHYS 241, PHYS 242 must be taken by Physics majors.

## Highly Recommended Courses

*These courses are sometimes required by medical and dental schools and may be useful in preparing for the MCAT or DAT exams.*

Code	Title	Units
MATH 115	COLLEGE ALGEBRA <sup>1</sup>	3
BIOL 221 & 221L	HUMAN ANATOMY & PHYSIOLOGY I [LECTURE] and HUMAN ANATOMY & PHYSIOLOGY I [LAB]	4
BIOL 222 & 222L	HUMAN ANATOMY & PHYSIOLOGY II [LECTURE] and HUMAN ANATOMY & PHYSIOLOGY II [LAB]	4
BIOL 309	GENETICS	4
BIOL 408	CELL BIOLOGY	4

BIOL 409	MOLECULAR BIOLOGY	4
CHEM 351	BIOCHEMISTRY I	3

<sup>1</sup> Students are encouraged to take other mathematics courses to meet the requirements of specific medical schools.

Undergraduate students may obtain the B.S. or B.A. degree in any major but **must** as a minimum take the Required Courses before applying to professional school. Most Premedical and Predental students major in Biology or Chemistry.

An undergraduate degree from Towson University requires a minimum of 120 units. This includes the completion of the Core Curriculum requirements and the courses required for a major (approximately 36 units).

## Prepharmacy Preparation

*Program Director:* Dr. Ana-Maria Soto

Smith Hall 569  
Phone: 410-704-2605  
Email: [asoto@towson.edu](mailto:asoto@towson.edu)

Students planning a career in pharmacy may apply to a college of pharmacy after taking or expecting to complete a total of 68 units of university credit, including the required courses. Student averages are evaluated in the following four areas:

1. overall college work
2. required courses
3. chemistry courses
4. mathematics and physics courses

In addition, applicants are required to satisfactorily pass the Pharmacy College Admission Test (PCAT), followed by a personal interview by the admission committee of the pharmacy school.

Required courses include 3 units of English, 6 units of mathematics (through Calculus I), 16 units of biology, 8 units of physics and 18 units of chemistry. The remaining units (18–20) include elective courses, such as sociology, economic principles and problems, public speaking, modern languages, art, music, psychology, botany, biology and computer programming. Colleges of pharmacy now give preference in admission to students who not only complete the specific course requirements, but also are on schedule to graduate with a B.S. before beginning pharmacy school.

Students interested in pharmacy as a professional career should consult with the prepharmacy adviser in the Department of Chemistry upon admission to Towson University. Students need to plan a course program, declare an academic major and become cognizant of the specific admissions requirements of the pharmacy college that they plan to attend. The recommended course sequence is based upon the requirements of the University of Maryland and is typical of most pharmacy schools.

## Prepharmacy Course Requirements

Code	Title	Units
BIOL 200 & 200L	INTRODUCTION TO CELLULAR BIOLOGY AND GENETICS [LECTURE] and INTRODUCTION TO CELLULAR BIOLOGY AND GENETICS [LAB]	4

BIOL 221 & 221L	HUMAN ANATOMY & PHYSIOLOGY I [LECTURE] and HUMAN ANATOMY & PHYSIOLOGY I [LAB]	4
BIOL 222 & 222L	HUMAN ANATOMY & PHYSIOLOGY II [LECTURE] and HUMAN ANATOMY & PHYSIOLOGY II [LAB]	4
BIOL 315 or BIOL 318	MEDICAL MICROBIOLOGY MICROBIOLOGY	4
CHEM 131 & 131L	GENERAL CHEMISTRY I LECTURE and GENERAL CHEMISTRY I LABORATORY	4
CHEM 132 & 132L	GENERAL CHEMISTRY II LECTURE and GENERAL CHEMISTRY II LABORATORY	4
CHEM 331	ORGANIC CHEMISTRY I	5
CHEM 332	ORGANIC CHEMISTRY II	5
COMM 131	PUBLIC SPEAKING	3
ECON 201	MICROECONOMIC PRINCIPLES	3
ENGL 102	WRITING FOR A LIBERAL EDUCATION	3
MATH 231 or MATH 237	BASIC STATISTICS ELEMENTARY BIOSTATISTICS	3
MATH 273	CALCULUS I	4
PHYS 211	GENERAL PHYSICS I; NON CALCULUS-BASED <sup>1</sup>	4
PHYS 212	GENERAL PHYSICS II; NON CALCULUS-BASED <sup>1</sup>	4

<sup>1</sup> PHYS 241 and PHYS 242 can be substituted for the above, but these two courses require calculus as a prerequisite.

## Preveterinary Preparation

*Program Director:* Lynn Middleto

Smith Hall 277  
Phone: 410-704-4586  
Email: [lamiddleton@towson.edu](mailto:lamiddleton@towson.edu)

Students planning a career in veterinary medicine should be aware of the following considerations as they prepare for admission to veterinary school:

1. To be admitted to these very selective schools, students must have an outstanding record, usually with a minimum of 90 undergraduate units.
2. Most entering veterinary students have a B.S. or B.A. degree with a major in Biology or Chemistry, although other specific disciplines may be acceptable if basic courses in biology, chemistry, physics and mathematics are included.
3. Although there are no specific tests required for admission to some veterinary schools, most request indications of aptitude as reflected in the GRE or other standardized examinations.
4. Veterinary schools expect applicants to have experience in aiding or assisting a veterinarian or working in adjunct fields as a volunteer or paid assistant. Varied experience, including research, is considered valuable.
5. Advising for preveterinary students is available through the Department of Biological Sciences. It is strongly suggested that students seek these advisory services upon entering Towson University to maximize their career planning strategies.

Careful planning and early contact with veterinary schools is crucial. For further information, contact Professor Lynn Middleton, Department of Biological Sciences, at [lamiddleton@towson.edu](mailto:lamiddleton@towson.edu).

## Recommended Science Courses

Code	Title	Units
BIOL 200 & 200L	INTRODUCTION TO CELLULAR BIOLOGY AND GENETICS [LECTURE] and INTRODUCTION TO CELLULAR BIOLOGY AND GENETICS [LAB]	4
BIOL 202	INTRODUCTION TO ECOLOGY AND EVOLUTION	4
BIOL 207	GENERAL ZOOLOGY	4
BIOL 309	GENETICS	4
BIOL 318	MICROBIOLOGY	4
BIOL 325	ANIMAL PHYSIOLOGY	4
BIOL 408	CELL BIOLOGY	4
CHEM 131 & 131L	GENERAL CHEMISTRY I LECTURE and GENERAL CHEMISTRY I LABORATORY	4
CHEM 132 & 132L	GENERAL CHEMISTRY II LECTURE and GENERAL CHEMISTRY II LABORATORY	4
CHEM 331	ORGANIC CHEMISTRY I	5
CHEM 332	ORGANIC CHEMISTRY II	5
CHEM 351	BIOCHEMISTRY I	3
PHYS 211	GENERAL PHYSICS I; NON CALCULUS-BASED	4
PHYS 212	GENERAL PHYSICS II; NON CALCULUS-BASED	4
MATH 237 or PSYC 212	ELEMENTARY BIostatISTICS BEHAVIORAL STATISTICS	4
MATH 211 or MATH 273	CALCULUS FOR APPLICATIONS CALCULUS I	3