

## B.S. in Chemistry – pre-health science track

<http://chemistry.gatech.edu/academics/undergraduate/pre-health-science>

The B.S. in Chemistry (pre-health science option) offers students well-balanced training in the fundamental areas of chemistry (i.e., organic, analytical, inorganic, physical, and biochemistry) and courses that prepare students for careers in the health-related professions. This curriculum meets the admission requirements for medical, pharmacy, dental, veterinary, physical therapy or graduate school. Students choosing this option are encouraged to enroll in a wide range of pre-health courses, social science electives and free electives. Graduates typically enter professional schools in medicine, dentistry, pharmacy or related fields.

Typical Program of Study:

***Degree requirement: TOTAL = 120 Hours plus 2 Hours Wellness Requirement***

	First Semester		Second Semester	
<b>1st Year</b>	CHEM 1211K (4) MATH 1551 (2) ENGL 1101 (3) GT 1000 (1) BIOL 1510 (4) <i>Sub-Total (14)</i>	Chemical Principles I Differential Calculus English Composition I Freshmen Seminar Biological Principles	CHEM 1212K (4) MATH 1552 (4) ENGL 1102 (3) BIOL 1520 (4) <i>Sub-Total (15)</i>	Chemical Principles II Integral Calculus English Composition II Intro Organismal Biol
<b>2nd Year</b>	CHEM 2211 (3) CHEM 2311 (3) <b>Pre-Health Elec.**(3)</b> PHYS 2211 (4) MATH 1553 (2) <i>Sub-Total (15)</i>	Quantitative Anal Lab Organic Chemistry I Intro to Physics I Intro Linear Algebra	CHEM 2313 (3) CHEM 2380 (2) PHYS 2212 (4) <b>Pre-Health Elec.**(3)</b> <b>Core Elective* (3)</b> <i>Sub-Total (15)</i>	Bioorganic Chemistry Synthesis Lab I Intro to Physics II
<b>3rd Year</b>	CHEM 3411 (3) CHEM 3211 (5) <b>Pre-Health Elec.**(3)</b> <b>Core Elective* (2)</b> <b>Core Elective* (3)</b> <i>Sub-Total (16)</i>	Physical Chemistry I Analytical Chemistry Wellness Requirement	CHEM 3412 (3) CHEM 4699 (3) <b>Pre-Health Elec.**(3)</b> <b>Free Elective (3)</b> <b>Core Elective* (3)</b> <i>Sub-Total (15)</i>	Physical Chemistry II Research Experience
<b>4th Year</b>	CHEM 3111 (3) CHEM 3380 (3) <b>Core Elective* (3)</b> <b>Pre-Health Elec.**(3)</b> Core Elective* (6) <i>Sub-Total (18)</i>	Inorganic Chemistry Synthesis Lab II	CHEM 3511/4511 (3) CHEM Elective (3) <b>Core Electives* (3)</b> <b>Core Elective* (3)</b>  <b>Free Elective (2)</b> <i>Sub-Total (14)</i>	Biochemistry Elective

### \* **Core Electives**

Note that most core electives are 3 credits with the exception of APPH 1040 or 1050. Within the core electives both the US Perspective and Global Perspective requirements must be satisfied.

- Wellness requirement (2 credits): APPH 1040 or APPH 1050 (credit not allowed for both)
- CS 1301 Intro to Computing, 1315 Intro Media Computation, or 1371 Comp Eng. (3);
- Humanities electives (6 credits required); there are many HUM electives
- Social Science electives (9 credits required); there are many SS electives

#### *Some Pre-health suggestions might include:*

SOC 1101 Intro to Sociology (3 credits)  
PSYC 1101 General Psychology (3 credits)  
PSYC 2103 Human Development (3 credits) – Pre-req PSYC 1101  
PSYC 2230 Abnormal Psychology (3 credits) – Pre-req PSYC 1101  
PSYC 2020 Psychological Statistics (3 credits) – Pre-req PSYC 2015 and MATH 1552

- History / constitutional / legislative elective (3 credits): HIST 2111, HIST 2112, POL 1101, INTA 1200, or PUBP 3000; (Credit not allowed for both INTA 1200 and POL 1101).

### \*\* **Pre-Health Science Electives**

- Select five of the following. Please note that it will be beneficial to take some Pre-Health electives pre-MCAT exam (marked with +) and some pre-medical school.

APPH 3753 / BIOL 3753 Anatomy (3 credits) – Pre-reqs BIOL 1520 and CHEM 1211K

APPH 3754 / BIOL 3754 Anatomy Lab (1 credit) – Pre-req with concurrency: APPH 3753

APPH 3755 / BIOL 3755 Human Physiology (3 credits) – Pre-req: APPH 3753

APPH 3756 / BIOL 3756 Human Physiology Lab (1 credit) – Pre-req: APPH 3753 and with concurrency APPH 3755

APPH 4400 Human Neuroanatomy (3 credits) – Pre-req: None

BIOL 4650 Bioethics (2 credits) - Pre-req: BIOL 1510 or BIOL 1511

BIOL 2344+ Genetics (3 credits) - Pre-req: BIOL 1510

BIOL 2345 Genetics Lab (1 credit) - Pre-req: BIOL 1510 or BIOL 1511; co-req: BIOL 2344

BIOL 3380+ Introduction to Microbiology (3 credits) – Pre-req: BIOL 1510 and CHEM 1211K

BIOL 3381 Intro Microbiology Lab (1 credit) - Pre-req: BIOL 1510 or BIOL 1511 and CHEM 1212K; co-req: BIOL 3380

BIOL 3450+ Cellular and Mol. Biology (3 credits) – Pre-req: BIOL 1510 and CHEM 2311

BIOL 3451 Cell Molecular Biology Lab (1 credit) - Pre-req: BIOL 1510 or BIOL 1511, and CHEM 2311 or CHEM 1315; co-

BIOL 4015 Cancer Biology and Technology (3 credits) – Pre-req: BIOL 1510 or CHEM 1212K req: BIOL 3450

BIOL 4340 Medical Microbiology (3 credits) - Pre-req: BIOL 3380

BIOL 4464 Developmental Biology (3 credits) – Pre-reqs: BIOL 2344 and BIOL 3450

BIOL 4545 Human Genetics (3 credits) – Pre-req: BIOL 2344

BIOL 4570 Immunology & Immunochem (3 credits) - Pre-reqs: BIOL 2344 and BIOL 3450

BMED 2600 Physiology of Cellular and Molecular Systems (3 credits) - Pre-req: BMED 3100

CHEM 4521 Biophysical Chemistry (3 credits) – Pre-reqs: CHEM 3411 and CHEM 4511

CHEM 4765 Drug Design, Dev, Delivery (3 credits) – - Pre-reqs: CHEM 4511

### \*\*\*Free Electives

- Free electives may be any GT courses. Only Free Electives may be taken as Pass / Fail grade mode (up to 9 hours total).

GT 1000 Freshmen Seminar (1 credit) is recommended for all incoming freshmen

- Pre-health free elective suggestions may include, but are not limited to the following

Statistics (MGT 2250, BIOL 2400, BIOL 4401, PSYC 2020 or MATH 3215)

APPH 3000 Survey of Medicine (3 credits) – Pre-reqs: BIOL 1510 and CHEM 2311

APPH 3500 Nutrition and Health (2 credits) – Pre-req: APPH 1040

APPH 3751 Anatomy and Physiology (3 credits) – Pre-reqs: BIOL 1510 and CHEM 1212K

APPH 4100 Exercise Physiology (3 credits) – Pre-req: APPH 3751

APPH 4200 Kinesiology (3 credits) – Pre-reqs: BIOL 1510, MATH 1552

APPH 4400 Human Neuroanatomy (3 credits) – Pre-req: None

APPH 4600 Muscle Structure and Plasticity (3 credits) – Pre-req: BIOL 1510

BIOL 2802 Atlanta Zoo Internship (pre-vet only) (2 credits)

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BIOL 4801 Special Topics – Bioethics Advanced Reading (1 credit) – Pre-req: BIOL 4650

BIOL 4802 Special Topics – Drug Discovery (2 credits)

BIOL 4607 Molecular Microbiology (Molecular Biology of Microbes: Disease, Nature, and Biotechnology) (3 credits) – Pre-req: 1510

BIOL 480X Special Topics (The following Special Topics courses are taught regularly and maybe be converted to permanent course numbers in the future)

1. BIOL 4802 Drug Discovery (2 credits)
2. BIOL 4803 Health, Genes, and Society (3 credits)
3. BIOL 4803 Virology (3 credits)
4. BIOL 4803 Biological Basis for Public Health (3 credits)

HTS 2080 Intro Hist Disease and Med – Pre-req: None

HTS 3070 Culture and Society – Pre-req: None

HTS 3086 Sociology of Health and Medicine – Pre-req: None

HTS 3087 History of Medicine – Pre-req: None

HTS 3803 Special Topics (e.g. Race, Science and Medicine)

HTS 3088 Race Medicine and Science – Pre-req: None

LMC 2300 Intro Biomedicine and Culture (3 credits) – pre-req: ENGL 1102  
LMC 3219 Literature and Medicine (3 credits) – pre-req: ENGL 1102  
LMC 3318 Biomedicine and Culture (3 credits) – pre-req: ENGL 1102  
LMC 3403 Tech Communications – Pre-req: ENGL 1102  
MGT 3662 Management in Healthcare Sector – Pre-req: ENGL 1102  
PSYC 2230 Abnormal Psychology (3 credits) – Pre-req: PSYC 1101  
PSYC 3011 Cognitive Psychology (3 credits) – Pre-req: PSYC 2020  
PSYC 3020 Biopsychology (3 credits) – Pre-reqs: PSYC 1101 and BIOL 1520  
PSYC 4090 Cognitive Neuroscience (3 credits) – Pre-reqs: PSYC 3011  
PSYC 4100 Behavioral Pharmacology (3 credits) – Pre-reqs PSYC 1101, BIOL 1520 & CHEM 1212K

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**Lab Electives:** Select two of three lab courses. The lab elective may be fulfilled with either CHEM 3380 (3 credits) or CHEM 3481 (2 credits) or one of the following [CHEM 4695 (3 credits) or CHEM 4699 (3 credits) or CHEM 4694 (no credit) or CHEM 4698 (no credit)]. **Research or Internship Experience:** Either Undergraduate Research CHEM 4699 (3) or Undergraduate Internship CHEM 4695 (3) are acceptable. If research or an internship is conducted for pay / audit rather than credit (e.g., CHEM 4698 or CHEM 4694) , then additional free elective(s) may be substituted to achieve the required earned hours to graduate. The research or internship experience must include a final comprehensive laboratory report. Only one Research or Internship course may be used for the Lab elective requirement. If CHEM 3481 is used, add one free elective.

**Technical Electives:** The technical elective requirement may be fulfilled by coursework in Science, Engineering, and Computing at the 3000 level or higher. MATH 2401 or MATH 2551 or MATH 2403 or MATH 2552 may also be used for a Technical Elective.

**Free Electives:** Pass-fail only allowed for Free Electives.

**\*\*Pre-Health Science Electives**

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>	<b>Pre-requisites</b>	<b>Semesters offered</b>
APPH 3753 or BIOL 3753	Anatomy	3	BIOL 1520 CHEM 1211K	Fall only
APPH 3754 or BIOL 3754	Anatomy lab	1	APPH 3753 with concurrency	Fall only
APPH 3755 or BIOL 3755	Human Physiology	3	APPH 3753	Spring only
APPH 3756 or BIOL 3756	Human Physiology Lab	1	APPH 3755 with concurrency	Spring only
BIOL 2344+	Genetics	3	BIOL 1510	Fall, spring, summer
BIOL 3380+	Intro. to microbiology	3	BIOL 1510 CHEM 1211K	Fall only
BIOL 3450+	Cellular and molecular biology	3	BIOL 1510 CHEM 2311	Fall, spring
BIOL 4015	Cancer biology and technology	3	BIOL 1510 BIOL 1212K	Fall only
BIOL 4340	Medical microbiology	3	BIOL 3380	
BIOL 4464	Developmental biology	3	BIOL 2344 BIOL 3450	Fall, spring
BIOL 4570	Immunology and Immunochemistry	3	BIOL 2344 BIOL 3450	Spring only
CHEM 4521	Biophysical Chemistry	3	CHEM 4511 and CHEM 3411	Fall, Spring only
CHEM 4765	Drug design, development, delivery	3	CHEM 4511	Spring only

**\*\*Free Electives**

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>	<b>Pre-requisites</b>	<b>Semesters offered</b>
APPH 3000	Survey of Medicine	3	BIOL 1510 CHEM 2311	Spring only
APPH 3500	Nutrition and health	2	APPH 1040	
APPH 3751	Anatomy and physiology	3	BIOL 1510 CHEM 1212K	
APPH 4100	Exercise physiology	3	APPH 3751	
APPH 4200	Kinesiology	3	BIOL 1510 MATH 1552	Fall only
APPH 4600	Muscle structure and plasticity	3	BIOL 1510	Spring only
APPH 4600	Muscle structure and plasticity	3	BIOL 1510	Spring only
BIOL 2802	Atlanta zoo internship	2	None	Fall only
BIOL 4560	Bioethics	3	BIOL 1510	Fall only
BIOL 4607	Molecular Microbiology	3	BIOL 1510	Fall only
HTS 2080	Intro. to history of disease and medicine	3	None	Fall only
HTS 3070	Culture and Society	3	None	
HTS 3086	Sociology of Health and Medicine	3	None	Spring only
HTS 3087	History of Medicine	3	None	
HTS 3088	Race Medicine and Science	3	None	
LMC 2300	Intro. to biomedicine and culture	3	ENGL 1102	Spring only
LMC 3219	Literature and medicine	3	ENGL 1102	Fall and spring
LMC 3318	Biomedicine and culture	3	ENGL 1102	
LMC 3403	Technical communications*	3	ENGL 1102	Fall and spring
MGT 3662	Management in Healthcare Sector	3	ENGL 1102	Fall only
PSYC 2230	Abnormal psychology	3	PSYC 1101	Fall and spring
PSCY 3011	Cognitive psychology	3	PSYC 2020	Fall and spring
PSYC 3020	Biopsychology	3	PSYC 1101 BIOL 1520	Fall and spring
PSYC 4090	Cognitive neuroscience	3	PSYC 3011	
PSYC 4100	Behavioral pharmacology	3	PSYC 1101 BIOL 1520 CHEM 1212K	

\*Public speaking is required for pre-pharmacy

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