

**PRE-HEALTH HANDBOOK FOR FIRST- AND SECOND-YEAR STUDENTS**

**BY**

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(for First- and Second-year students)**

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## INTRODUCTION

The Pre-Health Professions Advising Office was created in 1966 to help students seeking entry into a doctoral level or master's level health profession. These professions include medicine, dentistry, optometry, podiatry, veterinary medicine, chiropractic, dietetics, occupational therapy, pharmacy, physical therapy, public health, and physician assistant. Over the years the services provided by the office have grown to include curricular advising, credentialing, programming, administering special programs, and general advising about university requirements. Pre-Health Professions Advising Team includes Dr. Thomas Langhorne, the Director of Pre-Health Services, and Harpur Advisors Kimberly Maurer, Alondra Hughes, Matthew O'Ryan, Evan Mills, Divine Sebuharara, Karen Cummings, Kayla Kraus, Angela LaRosa, and Dan Auber. Dr. Langhorne advises juniors, seniors, and alumni, while the other team members advise first & second year pre-health students. Jacob Uzel is the Pre-Health Office Assistant. The Pre-Health Advising Team is further assisted by the Pre-Health Student Advisory Committee, which publishes a monthly *Pre-Health Newsletter*, *The Bi-Weekly BUZZ*, and whose members serve as Peer Advisors. Dr. Langhorne and Jacob Uzel are located in Old Champlain North suite G-51, and Kimberly Maurer, Alondra Hughes, Matthew O'Ryan, Evan Mills, Divine Sebuharara, Karen Cummings, Kayla Kraus, Angela LaRosa, and Dan Auber are located in Old Champlain 110 (within the Harpur Academic Advising Suite). The Peer Advisors hold student appointments by zoom.

All Binghamton University pre-health students need to subscribe themselves to the Pre-Health Listserv by **declaring their pre-health area of interest** through the **link on the Pre-Health website**. Once submitted, it will take three to five business days to be added to the listserv. You can access the Pre-Health web page at <http://www.binghamton.edu/pre-health/>.

Other important information is available on the Pre-Health website. Also, there is a Pre-Health Advising at Binghamton Facebook group (<https://www.facebook.com/groups/BinghamtonPreHealth/>).

This handbook addresses the needs of first and second year pre-health students in curricular information, degree planning, access to office resources and other areas. Please read it carefully so you understand what is expected of you.

## FIRST YEAR

### **Introduction**

Your first year is a time of transition into your role as a college student. Part of this transition is adjusting to a more demanding academic routine than you had in high school. As a pre-health student you are responsible for not only meeting the requirements necessary for admission into your chosen profession but also for meeting general education, college-wide and major requirements. While at first this may seem overwhelming and confusing, with careful planning and the assistance of your academic advisor you can ensure that all of your requirements are met by graduation.

Careful planning and a successful transition includes developing a balanced schedule which is especially important in your first two semesters. To achieve this, we recommend that you take no more than two science/math courses per semester. While some student's schedules may vary from this, it has been our experience that students who have a successful transition into Binghamton follow this advice. Since it is recommended that pre-health students also have a strong liberal arts background, including a familiarity with the social sciences and humanities, you will round out your schedule by taking two non-science/math classes. This combination of courses will provide the balance you need to get a good start to your freshman year.

### **Curriculum**

This discussion will address the specific courses required for admission to the various doctoral and masters level health professions programs and will suggest ways to plan your schedule so that you have satisfied these requirements at appropriate points during your academic career. There is, however, a caveat to this discussion, concerning students majoring in **BIOCHEMISTRY, CHEMISTRY, PHYSICS or BIOMEDICAL ENGINEERING**. These majors have a set of required courses which you must take in a specific sequence. Students in these majors should consult their college or school's academic advisor, the Binghamton University Bulletin, departmental sources and/or the appropriate faculty advisor to determine these requirements. They should **NOT** follow the scheduling practices discussed below. In addition, all students should review the Advanced Placement chart and the transfer equivalency tables to avoid duplication of courses.

**First Year Research Immersion (FRI):** Students who are part of the FRI should note that the FRI courses listed below fulfill the requirements of BIOL 115, so that they do not need to enroll in BIOL 115. These courses are: BIOL 225, CHEM 261, BIOL 241, ANTH 205, ANTH 206, PSYC 345. In addition, the following FRI courses fulfill the requirements of CHEM 106, so that they do not need to enroll in CHEM 106. These courses are: CHEM 211, ENVI/GEOL 234, ENVI 206.

**ALL COURSES LISTED BELOW MUST BE TAKEN FOR A LETTER GRADE.**

The courses required for admission to doctoral level health professions programs include:

<b>Subject</b>	<b>Requirement</b>	<b>Binghamton University Courses</b>
Biological Sciences	Two semesters with lab	BIOL 113, 114, and 115
Inorganic Chemistry	Two semesters with lab	Option A: CHEM 104, 105, & 106 Option B CHEM 107-108 Option C: CHEM 111 and 341 You must choose among options A, B, and C. You may not switch between sequences. <u>Be sure to check with your intended major to learn if there is a preferred sequence for that major.</u>
Organic Chemistry	Two semesters with lab	CHEM 231, 332 and 335
Physics	Two semesters with lab	PHYS 121 and 122 (or PHYS 131 and PHYS 132)
Mathematics	At least one semester	See next section
English	Two semesters	Any two courses in the English (ENG), Rhetoric (RHET), Creative Writing (CW), Writing (WRIT) or Comparative Literature (COLI) Departments.

**Additional courses for doctoral programs:** Although there is a degree of uniformity among the various doctoral health professions, some variation in these requirements does occur, especially in the health sciences. You must research your schools of interest and confirm the prerequisites required for your intended programs and schools.

Medicine- Biochemistry: BIOL 304 (or BCHM 403), psychology: PSYC 111, statistics: MATH 147 or PSYC 243, and calculus I: MATH 224 & 225. To prepare for the MCAT, medical anthropology, ANTH 240, is recommended.

Dentistry-Most dental schools are now requiring one semester of calculus: MATH 224 & 225. Most dental schools also require biochemistry: BIOL 304 (or BCHM 403). Some dental schools may recommend or require microbiology: BIOL 314 & 421 or BIOL 319 & 329. Remember that Stony Brook School of Dentistry stipulates that all required coursework be completed by the time of application, which is typically at the end of junior year. Check their website for further information.

Chiropractic-Mathematics is not required. Psychology: PSYC 111 usually is required.

Optometry- Most optometry schools require psychology: PSYC 111 and statistics: MATH 147 or PSYC 243. Some programs also require microbiology: BIOL 314 & 421 or BIOL 319 & 329, biochemistry BIOL 304, calculus I: MATH 224 & 225, and calculus II: MATH 226 & 227.

Pharmacy-Most pharmacy schools require microbiology: BIOL 314 & 421 or BIOL 319 & 329, biochemistry: BIOL 304 (or BCHM 403), calculus I: MATH 224 & 225, and calculus II: MATH 226 & 227, statistics: MATH 147 or PSYC 243, one semester of economics: ECON

160 and two semesters of anatomy and physiology: BIOL 251 & BIOL 347.

Physical Therapy- Psychology: PSYC 111, Human Anatomy & Physiology: BIOL 251 & 347, Statistics: MATH 147 or PSYC 243. Organic chemistry is not always required.

Podiatry- Podiatry schools require the MCAT and therefore, students should plan to complete the following courses to best prepare for the MCAT: Biochemistry: BIOL 304 (or BCHM 403), psychology: PSYC 111, statistics: MATH 147 or PSYC 243. Medical anthropology, ANTH 240, is recommended to prepare for the MCAT.

Veterinary Medicine-Most veterinary schools require genetics: BCHM/BIOL 401 or BIOL 332, microbiology: BIOL 314 & 421 or BIOL 319 & 329, biochemistry: BIOL 304 (or BCHM 403), calculus I: MATH 224 & 225 and statistics: MATH 147 or PSYC 243. Most schools do not require calculus II.

**Additional requirements for health science programs:** The list below illustrates only a few examples of health science programs. There are more (speech therapy, etc.). **Due to the different requirements for these various health science programs, students should contact individual programs for specific admissions requirements.**

Occupational Therapy- Psychology: PSYC 111, Human Anatomy & Physiology: BIOL 251 & 347, Developmental Psychology: PSYC 220, Statistics: MATH 147 or PSYC 243, Abnormal Psychology: PSYCH 223. Organic chemistry is not always required. One semester of physics may be required.

Physician Assistant- Psychology: PSYC 111, Human Anatomy & Physiology: BIOL 251 & 347, Statistics: MATH 147 or PSYC 243. Most programs require Microbiology: BIOL 314 & 421 or BIOL 319 & 329, Biochemistry: BIOL 304 (or BCHM 403). Physics is not typically required.

Dietetics and Nutrition- Human Anatomy & Physiology: BIOL 251 & 347, cell biology: BIOL 311, microbiology: BIOL 314 & 421 or BIOL 319 & 329, Nutrition: HWS/NURS 332 and statistics: MATH 147 or PSYC 243. Some programs may require one semester of calculus and/or one semester of physics.

**Online courses:** Most professional schools do not accept online science courses, especially those with online labs. It is the student's responsibility to check the requirements for each school to which they are applying.

### **Summer Session**

Students are often interested in taking required pre-health science courses during summer session. Unless these summer session courses are taken at Binghamton University, you should refrain from this. Many professional schools, especially medical and dental schools, frown upon the practice of taking required science courses away from your home institution during the summer, especially if they are taken at community colleges. Many health professions graduate programs limit the number of community college science course credits they will accept from a student, if students take those courses after they matriculate at Binghamton University. It is acceptable, however, to take non-science courses at home if you need additional credit or have had scheduling difficulties at Binghamton. If you are in a

situation where you feel it is absolutely necessary to take a required science at home during summer, you should check with one of the Pre-Health Advising Team first. Also, remember if you are taking a course at home that is required for your major you will need to get your department's prior approval. For further information, please see "Guidelines for Transferring Credit to Harpur College," which is available on the Harpur College Academic Advising web page. (NB: summer courses taken at Binghamton University should not pose a problem).

### Winter Session

Students may also be interested in taking courses during the winter session. It is recommended students do not take required science courses during the winter session. General education or college required courses may be acceptable to take during the winter session. If you are interested in taking a required pre-health prerequisite course during the winter, you should check with one of the Pre-Health Team first. The exception to this would be ANTH 240.

### Sample Curricula

The best way to understand how these various courses relate to one another and to your overall curriculum is to review a few sample schedules. These schedules will focus primarily on freshman year, but also will illustrate sophomore year in order to provide a more complete picture of your first two years at Binghamton. You will note that some form of introductory chemistry (CHEM 104, 105, 106; CHEM 107-108) is a constant in these schedules because these courses are pre-requisites for organic chemistry. If you are a science major, remember to consult with your major department's website to be sure you are taking the appropriate chemistry sequence.

Also, some schedules include idiosyncrasies (e.g. summer courses, transfer courses, AP and H-IB credit) to illustrate how these may impact your schedule.

#### SAMPLE SCHEDULE A

##### First Year

###### Fall

CHEM 104  
BIOL 113  
Non-science  
(Non-science)#

###### Spring

CHEM 105  
BIOL 114  
BIOL 115  
CHEM 106  
Non-Science

##### Second Year

###### Fall

CHEM 231  
MATH 224  
MATH 225  
Non-science  
Non-science

###### Spring

CHEM 332  
CHEM 335 (2 credits)  
Non-science  
Non-science  
Non-science

#It is acceptable to enroll for 12 credits first semester of freshman year.

## SAMPLE SCHEDULE B

### First Year

#### Fall

CHEM 104  
CHEM 106  
Non-science  
(Non-science)<sup>#</sup>

#### Spring

CHEM 105  
BIOL 113  
Non-science  
Non-science

### Second Year

#### Fall

CHEM 231  
BIOL 114  
Non-science  
Non-science

#### Spring

CHEM 332  
CHEM 335 (2 credits)  
BIOL 115  
Non-science

<sup>#</sup> It is acceptable to enroll for 12 credits first semester of freshman year.

## SAMPLE SCHEDULE C

### First Year

#### Fall

CHEM 104  
MATH 224  
MATH 225  
Non-science\*

#### Spring

CHEM 105  
MATH 147  
Non-science  
Non-science

### Second Year

#### Fall

CHEM 231  
BIOL 113  
Non-science  
Non-science  
CHEM 106

#### Spring

CHEM 332  
BIOL 114  
CHEM 335<sup>#</sup>  
BIOL 115

\* It is acceptable to enroll for 12 credits first semester of freshman year.

<sup>#</sup> May be postponed until fall semester of junior year.



## SAMPLE SCHEDULE D

### First Year

#### Fall

CHEM 107  
MATH 224  
MATH 225  
Non-science  
Non-science#

#### Spring

CHEM 108  
BIOL 114  
Non-science  
Non-science

### Second Year

#### Fall

CHEM 231  
BIOL 113  
BIOL 115  
Non-science

#### Spring

CHEM 332  
CHEM 335  
Course  
Non-science

# It is acceptable to enroll for 12 credits first semester of freshman year.

## SAMPLE SCHEDULE E

(Student has AP, H-IB or transfer credit for CHEM 104 and CHEM 105).

### First Year

#### Fall

CHEM 231  
Non-science  
Non-science  
CHEM 106

#### Spring

CHEM 332  
CHEM 335 (2 credits)  
Non-science  
Non-science

### Second Year

#### Fall

BIOL 114  
MATH 224  
MATH 225  
Non-science

#### Spring

BIOL 113  
PSYC 111  
BIOL 115  
Non-science

# It is acceptable to enroll for 12 credits first semester of freshman year.

As you can see from the sample schedules, there are a variety of ways to begin the pre-health course sequence at Binghamton University. The sequence is usually completed by taking physics and any other courses covered on admissions tests during junior year. Some students may have other required courses to complete during junior year, such as English or organic chemistry laboratory.

**However, everyone should have completed all the science requirements (excluding English) by the end of their third year if they plan to apply in sequence with their class year.** The reason for this stipulation is that the application process for most doctoral and master's level health professions takes between twelve and fourteen months; the entirety of your fourth year. In order to participate in the application process, most pre-health students are required to take a science-based admission test in the spring/summer of their third year or early in the fall of their fourth year. If you have not completed the science requirements by then, you will not be able to take the examination required for application, which results in having a one or two-year gap between Binghamton and professional school. While some students may elect to postpone entering professional school for a variety of reasons, most students would not want this alternative forced upon them because of poor planning. Pre-health students should be familiar with what coursework appears on their entry exam and if that differs from the stated admission requirements for their profession. This will assist them in planning their curricula.

In addition to the required science courses, there are several non-science courses which pre-health students have found interesting. Among these are medical ethics, a variety of biological anthropology courses, health science courses, and health and wellness studies courses. Other courses in the English, Sociology, and History departments may be of interest. Please remember that these courses may fulfill one or more of your college or general education requirements and you should feel free to explore non-science areas.

### **Co-Curricular and Related Activities**

Students often have questions about what non-academic activities will be beneficial to them during their years at Binghamton University. These generally fall into two categories: those perceived as "required" and all others.

#### **"Required"**

Generally, admissions committees expect that you have had some exposure to their profession, other than being a patient, prior to applying. This can be accomplished in a variety of ways, but is usually an incremental process occurring over several semesters. For example, pre-medical students can begin by being hospital volunteers, doing an internship, a summer program, or the Summer Physician Mentor Program. Service in Harpur's Ferry or other EMS services also provides exposure, as does working as a medical assistant or patient care technician.

Pre-dental and pre-optometry students usually begin by observing in their own dentist's/optometrist's office and then may branch out into other activities. Pre-dental students can volunteer/shadow with a local dental practice or do a summer program. Pre-optometry students usually try to volunteer in a variety of practice settings and may also do a summer program. Some local optometry practices host pre-optometry students.

It is very important for pre-veterinary students to gain veterinary experience as well as other experiences working with animals. Pre-veterinary students are required to shadow or work with a veterinarian. The Ross Park Zoo in Binghamton, sometimes has internships for pre-veterinary students. The pre-veterinary association also has information regarding opportunities in the local area.

Information about these options can be found on the Fleishman Center website, in the December *Pre-Health Newsletter*, on the science department webpages and from other on-line resources. Health science programs require students to complete direct patient contact hours. Sometimes this requirement can be in the thousands of hours. Most health science programs require a letter of recommendation from a

professional in that field. It is important that students seek opportunities to shadow/ volunteer, etc. early in their academic careers in order to achieve the number of hours required for their intended profession and also to have a variety of experiences.

### Other

Pre-health professions students tend to underestimate the importance of co-curricular activities, possibly because of their diffuse nature. Health profession schools want to see that you have non pre-health related interests and involvements outside of academics and outside of your “required” pre-professional exposure. What these activities are depends upon what your personal interests, likes, and dislikes are; hence their diffuse nature. They are, however, an important component of what defines you as an individual, and it is important to maintain a balance between the two types of activities.

You should avoid the “shotgun” approach to these activities. This probably worked for you in high school, but the workload and social atmosphere at Binghamton University make this approach difficult. In addition, pursuing activities in this manner will not impress admissions committees in the same way as it did undergraduate admissions offices.

### **Student Organizations**

Several campus organizations are oriented towards pre-health professions students. While it is not required that you join these, participation may broaden your horizons, provide additional opportunities to you, and enable you to learn from the experiences of upper-level students. Among these are: Harpur’s Ferry Volunteer Ambulance Service, Charles Drew Minority Pre-Health Society, the pre-med association, pre-SOMA, pre-PA society, pre-dental association, pre-veterinary society, and a pre-optometry club. There are several other pre-health clubs and new ones are founded every few years.

### **Pre-Health Professions Staff**

The Pre-Health Professions Advising Team includes Dr. Thomas Langhorne, Director of Pre-Health Services, who advises third- and fourth-year students as well as alumni. The Pre-Health Advising Team advises first- and second- year students pre-health students and includes Kimberly Maurer, Matthew O’Ryan, Evan Mills, Karen Cummings, Kayla Kraus, Alondra Hughes, Angela LaRosa, Divine Sebuharara, and Dan Auber. Jacob Uzel serves as the Pre-Health Office Assistant. The Pre-Health Advising Team is further assisted by the Pre-Health Peer Advisors.

The Pre-Health Office is in two locations. First and second year pre-health advising is housed within the Harpur Academic Advising Office in Old Champlain suite 110. Third year, fourth year, and alumni pre- health advising is located in Old Champlain North suite G-51. Peer Advisors meet with students by appointment over zoom. To make your visits to the office more effective, you should first consult the web page <http://www.binghamton.edu/pre-health/>. The information there may answer your questions without a trip to the office. Remember that the Peer Advisors have zoom appointments and may be able to help with your questions. Finally, please be prepared for contacts with the Pre-Health Team. The more clearly and quickly we understand your concerns, the more effectively we can respond to them.

The Pre-Health Office hours are listed below. At certain times of the semester these hours will be changed to accommodate higher than normal student traffic. These altered office hours will be posted on ***PREHLTH-L***. Summer hours differ significantly from these.

**Pre-Health for Third & Fourth Years and Alumni Advising:**

**Dr. Thomas Langhorne:**

Office: Old Champlain Hall North Suite G-51

Phone: 607-777-6305, Option 2

Email: [prhealth@binghamton.edu](mailto:prhealth@binghamton.edu). Please be concise when sending your questions. If you have several, a phone call, same day appointment, or regular appointment may be more appropriate.

Phone-Ins: Wednesday 10:30am-12:00pm

Same Day Appointments: Tuesday 1pm - 3pm

Appointments: Use **B-Successful** to make appointments. You must have **J2 status** and a **declared pre-health concentration** to make an appointment. If you have difficulty, please call Jacob Uzel, Pre-Health Office Assistant (607-777-6305, Option 2).

**Jacob Uzel:** Pre-Health Professions Assistant

Office: Old Champlain Hall North Suite G-51

Phone: 607-777-6305, Option 2

Email: [juzel@binghamton.edu](mailto:juzel@binghamton.edu)

Office hours: Monday – Friday 9:30am – 12pm and 1pm – 4:00pm

**Pre-Health First & Second Year Advising:**

**Evan Mills:** [emills@binghamton.edu](mailto:emills@binghamton.edu)

**Karen Cummings:** [ksweeney@binghamton.edu](mailto:ksweeney@binghamton.edu)

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**Kimberly Maurer:** [kmaurer@binghamton.edu](mailto:kmaurer@binghamton.edu)

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**Matthew O’Ryan:** [moryan@binghamton.edu](mailto:moryan@binghamton.edu)

**Divine Sebuharara:** [msebuhar@binghamton.edu](mailto:msebuhar@binghamton.edu)

**Kayla Kraus** [kkraus@binghamton.edu](mailto:kkraus@binghamton.edu)

**Dan Auber** [dauber@binghamton.edu](mailto:dauber@binghamton.edu)

Office: Old Champlain Hall (OH) room 110, within Harpur Academic Advising.

Phone number: 607-777-6305

Check Harpur Advising and Pre-Health websites for the team’s contact information/schedule.

Appointments: to schedule an appointment, use **B-Successful** in your MyBinghamton page. If you have difficulty, please call 607-777-6305.

**Peer Advising:** Hours are announced at the beginning of each semester and are posted on the Pre-Health website and the listserv. Pre-Health Peer Advisors meet with students by Zoom appointments. Make appointments online through **B-Successful**.

Web Page: <http://www.binghamton.edu/pre-health/>

All Binghamton University pre-health students need to subscribe themselves to the Pre-Health Listserv by **declaring their pre-health area of interest** through the **link on the Pre-Health website**. Once submitted, it will take three to five business days to be added to the listserv. You can access the Pre-Health web page at <http://www.binghamton.edu/pre-health/>.

FAX: The fax number for the Pre-Health Professions Office is 607-777-2744.

#### Student Advisory Committee/Peer Advisors

The Pre-Health Student Advisory Committee contains 2-3 student members from each of the three upper division classes (second - fourth year). Throughout the year, the Committee publishes a monthly newsletter, the Weekly BUzz, and pursues special agenda items. The Committee Members also serve as Peer Advisors and hold regular appointments by Zoom. Their names and email addresses are listed on the Pre-Health web page and appear in Pre-Health publications. If you have questions about pre-health, you should feel free to contact a Peer Advisor. If they cannot answer your question immediately, they will research it and reply to you as soon as possible. Committee members are the only students on campus with sufficient background and access to information to provide timely, accurate responses to you.

#### Student Conduct

Students are responsible for understanding and abiding by the regulations for both academic and non-academic conduct stipulated in the *Binghamton University Student Handbook* and in the *Binghamton University Bulletin*. These guidelines seek to provide an environment in which the rights of all members of the community are protected. Violation of the rules can jeopardize a student's future plans, particularly since most professions require disciplinary clearance. Furthermore, we are required to report such infractions to professional schools when you apply. If you have questions regarding this, please contact one of the Pre-Health Teammembers.

Most professions now require an additional disciplinary clearance as well as a criminal background check immediately before you enter professional school. This makes it more important than ever for you to not have a reportable offense in either of these categories.

#### A Final Comment

Everyone is aware that undergraduate grades are an important criterion for admission to health professions schools. Even more important, however, is the knowledge that is presumably, but not always, implied by good grades. You should strive for understanding; if you are successful, the grades will come automatically. If you get good grades in trivial courses, you will fool no one except yourself.

Furthermore, as you progress through your first and second years you may discover that your interests and aptitudes lie outside the health professions. You should be open to following these new pathways wherever they may lead. You will not be alone in this divergence, as many of your freshman classmates will be pursuing similar paths. You will, however, be happy and successful in aiming for these new, more personally rewarding goals.

## SECOND YEAR

### **Introduction**

Your second year at Binghamton is a transition year in many ways. Some of you will be crossing the boundary into upper-level course work, while others will be exploring areas you never knew existed. All of you will be selecting a major and clarifying your interest in the health professions. Your second year also brings with it the continuation of course work and activities you began during your first year. Therefore, only topics which are unique to second year students or later will be introduced here.

### **Curriculum**

The curricular discussion presented in the first year section included information about second year. At this time, you also need to consider how to integrate courses from your major into the pre-health schedule. For example, if you are a science major you should be careful not to schedule too many science courses within any given semester. Alternatively, if you are a non-science major, you will have to ensure that you can complete the major by the end of your fourth year, because the pre-health science courses will not overlap with your major requirements as they would with a science major. (Remember that “pre-health,” “pre-med” or “pre-dental” are not majors).

It is also during your second year that those of you pursuing any of the health science professions such as physical therapy, physician assistant, occupational therapy, pharmacy, etc. should obtain a detailed list of the requirements for your chosen schools. While some of this information is available on the Pre-Health web page, there is sufficient variation in requirements that checking individual programs is required.

### **Summer Programs**

There are a variety of summer programs for pre-health students. Some of these are offered through medical or dental schools, while others are offered through hospitals, research institutes, or other entities. Most programs accept applications from second and third years, though some are restricted to third years only. Summer programs typically are either experiential or research. Experiential programs provide hands-on exposure to a student's chosen profession. While there is usually an academic component to these programs, it is rarely of a classroom nature. Research programs provide students with exposure to scientific research, some of which may be related directly to medicine or another health profession. The financial support provided by these programs varies. It may be direct (i.e. stipend), indirect (i.e. room and board, transportation, etc.), a combination of the two, or none at all. The deadlines for these are variable, with some occurring as early as December, while others are as late as March. Further information can be obtained from the December Pre-Health Newsletter, *PREHLTH-L*, and from the undergraduate bulletin boards and listservs in the science departments. In addition, if you know students who have attended programs before, they will be able to provide information. Finally, you should consult the websites of the host institutions.

Some programs require that you have a letter of recommendation from a member of the Pre-Health Advising Team in addition to one from a faculty member. To arrange this, you will need to meet with a member of the Team at least once during fall or spring semesters of sophomore year. Be prepared for your meeting because you will need to accomplish a lot in the time allocated to you. Remember that

requests for letters from the Team require at least four (4) weeks advance notice.

It is important to get to know at least one faculty member, if not two, by the end of sophomore year so that you can ask them for recommendations for these summer programs. This is admittedly a challenging task in an academic environment characterized by large lecture classes and relative anonymity, however, there are ways you can cope with this. In addition to the list below, further information can be obtained by contacting any Peer Advisor.

Peer Advisors have suggested the following ways of getting to know faculty, even if classes are quite large. While this list is not exhaustive, it contains viable suggestions, especially for new students.

1. Have good attendance, sit near the front of the classroom, and try to sit in approximately the same place each day. Participate in class discussion.
2. Attend office hours regularly with legitimate questions. Attending office hours allows the professor to get to know you, which will prove to be beneficial when requesting letters of recommendation.
3. Complete assignments on time and otherwise demonstrate a good work ethic.
4. Follow up lectures with email questions if you are unable to attend faculty office hours regularly.

### **Study Abroad Programs**

Contrary to what you may have heard, it is possible for pre-health students to participate in study abroad programs. However, this requires additional planning. If you are interested in studying abroad, you should speak with a member of the Pre-Health Advising Team during fall semester of your second year. Typically, shifting required courses to summer session and re-configuring regular session will create a time gap within which it is easy to spend a fall or spring semester abroad. Alternatively, it is possible to do a study abroad program during the summer. In this instance, limited or no shifting of courses is required, which works best for some of the lengthier majors.

### **National Student Exchange**

An alternative to study abroad programs is the National Student Exchange (NSE). Participants in NSE spend up to a calendar year attending another university in a different part of the US, Canada, Puerto Rico, Guam or the US Virgin Islands. Furthermore, because the host universities are all accredited US-Canadian institutions, it is possible to satisfy some pre-health requirements while in attendance, a situation not available with study abroad programs.

### **Third Year Scholarships**

Currently there are four scholarships for third year pre-medical students:

- Edward Thorsen Memorial Scholarship,
- Melvyn H. Novegrod MD Memorial Scholarship,
- Lara M. Gordon and Robert N. Freedman Scholarship,
- Melvyn Novegrod MD & Marci Novegrod Family Scholarship

Application for these occurs during spring semester of your second year, with the recipients being notified by the end of the semester. Detailed information about these scholarships, as well as application materials, can be obtained from the Pre-Health web page after March 1st of your second year.

### **Transitions**

Typically your third year is perhaps the most important year for pre-health professions students. During this time, you will take an admission test, begin the process of application, and complete your credentials file. In order to provide advance information to you there is usually a SECOND YEAR STUDENT MEETING at some point during the year. This meeting is usually consists of a brief presentation by Team Members and Peer Advisors followed by a period for questions. The meeting will be announced on ***PREHLTH-L***.

The Second Year Student Meeting is the first of a series of meetings which will continue through senior year. The most important of these, however, are those held during your third year. To ensure that you are informed of these meetings and other events, please remember to subscribe to PREHLTH-L.

### **An Additional Note**

Most of you will have declared a pre-health area of interest upon entry into Binghamton University. However, if you are a late decider or a transfer student, you may not have done this yet. Check by going to the BU Brain and examining your academic transcript. If you see that you have a concentration in pre-health or a specific health profession, then you are alright. If not, you will need to declare since this affects your ability to make appointments with the Director of Pre-Health Services as a third or fourth year. Go to the following link: <https://my.binghamton.edu/community/main/preprofessionalareasofint>



## PRE-HEALTH SPECIAL PROGRAMS

### **Introduction**

There are several special programs available to pre-health students in Harpur College. Some of these are internal to Binghamton University, while others involve an articulation agreement with another university.

### **Harpur College Summer Physician Mentor Program**

The Harpur College Summer Physician Mentor Program is for second and third year students living in the Greater New York City metro area. The program is administered by Harpur Edge. Applications are available late fall/early spring semester. After screening by a committee for maturity, integrity, interest, GPA (3.5 or higher), and perceived gain from the program, selected students are notified of their placement. Program orientation is held on campus at the end of spring semester. Meeting with your mentor begins in early June. For further information, please consult the Harpur Edge website.

### **Binghamton University-SUNY Optometry 3/4 Joint Degree Articulation Agreement Program**

This program allows you to obtain a BA (Biology) degree from Binghamton and an OD degree from SUNY Optometry in seven years, instead of the eight years it normally takes to complete both degrees. You may apply as a high school senior, as a second semester first year, or as a second year. Because of the structured nature of the program and the short time you will be at Binghamton if accepted, transfer students are not eligible for the program.

High School Seniors: To enter the JDP directly out of high school you must be accepted into Harpur College, the undergraduate liberal arts division of Binghamton University. To do this you should apply under the curriculum code for "3/4 Optometry" listed in the master SUNY System application. You must also apply to, and be accepted into, the 3/4 Joint Degree Articulation Agreement Program by completing an application on the SUNY Optometry web site. The selection criteria for acceptance into the program are as follows: an SAT score of at least 1360 (minimum 700 math) or an ACT score of 29; a minimum high school grade average of 93/100; and a high school class rank in the top 10% of your graduating class. You must be accepted by both Binghamton University/Harpur College and SUNY-Optometry to participate in the program. For further information, please contact the SUNY-Optometry admissions office.

Second Semester First Year and Second Years: Students interested in the JDP also have the opportunity to apply during the second semester of their first year or during fall semester of their second year. You must complete an application on the SUNY Optometry website. The selection criteria for acceptance into the program are as follows: submit SAT scores or ACT scores; you must also have a minimum overall GPA of 3.3 and a minimum GPA of 3.3 in all science and math pre-requisite courses with no individual grade below C (2.0). For further information, please contact the SUNY-Optometry admissions office.

Concluding Remarks: If you are in the 3/4 Joint Degree Articulation Program you must adhere to several guidelines while at Binghamton University. You must meet at least yearly with a representative of SUNY Optometry. You must meet yearly with the Director of Pre-Health Services. You must maintain an overall GPA of at least 3.3 and a science and math GPA of 3.3. All science and math optometry pre-requisites must be completed with a grade of C (2.0) or higher. You will be provided with additional guidelines and instructions at the time of your initial (provisional) acceptance into the program.

During the summer between your second and third years you must file an application to SUNY Optometry through Optomcas (July 1-October 15). By December 30 of your third year you must take the Optometric Admissions Test (OAT) and attain science and academic average scores of 330 or greater. You must shadow several doctors of optometry, show evidence of community involvement and obtain a positive evaluation from the Director of Pre-Health Services. Once you have submitted all of this material, and passed preliminary screening, you will be invited for a final interview at SUNY Optometry.

A sample curriculum is provided below, which illustrates a way to complete all Optometry admission requirements, Binghamton University/Harpur College requirements, and some of those for your biology major requirements during the allotted time frame. This can vary, depending on AP and other external credit

### SAMPLE CURRICULUM FOR JDP STUDENTS

#### First Year

##### Fall Semester

BIOL 113 Introductory Biology	4
CHEM 104 Introductory Chemistry	4
English/Social Science/Humanity	4
English/Social Science/Humanity	<u>4</u>
	16

##### Spring Semester

BIOL 114 Introductory Biology	4
CHEM 105 Introductory Chemistry	4
BIOL 115 Introductory Biology Lab	2
English/Social Science/Humanity	<u>4</u>
	14

#### Second Year

CHEM 231 Organic Chemistry I	4
MATH 108	4
CHEM 106	2
English/Social Science/Humanity	4
English/Social Science/Humanity	<u>4</u>
	18

CHEM 332 Organic Chemistry II	4
CHEM 335 Organic Chemistry Laboratory	2
English/Social Science/Humanity	4
BIOL 311	4
HWS(?)	<u>2</u>
	16

#### Summer Session

PHYS 121 General Physics I	4
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PHYS 122 General Physics II	4
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#### Third Year

BIOL 355	4
MATH 147 (or PSYC 243) Statistics*	4
BIOL 304	4
English/Social Science/Humanity	4
HWS (?)	<u>2</u>
	18

BIOL 329	2
PSYC 111 General Psychology	4
BIOL 319	4
English/Social Science/Humanity	<u>4</u>
	14

\* In order to enroll in PSYC 243 Statistics you must complete PSYC 111 first. (AP is acceptable)

**Binghamton University-SUNY Upstate Medical University College of Medicine Upstate Accelerated Scholars Program**

This program allows recommended current Binghamton University undergraduate first year students to be guaranteed acceptance into Upstate's Doctor of Medicine (MD) Program if they satisfy the following eligibility requirements:

Eligibility

An excellent high school GPA (minimum 90% average or a 3.50) AND a first semester GPA of 3.50 at Binghamton. The score will not be rounded to meet these minimums.

Extra-curricular activities that clearly document experience in a healthcare setting and a commitment to community service or volunteer work. Students will be expected to track and report these activities and hours as an update to their Upstate representative but are not required to provide further documentation.

An SAT test score of 1360 or better (combined Critical Reading & Math) or ACT test score of 29 or better (Composite).

Applicants who meet the above requirements for consideration must:

1. Submit an internal application to the Pre-Health Office at Binghamton University early in spring semester of their First year. (Watch the listserv for further information)
2. After screening, a list of potential applicants will be sent to Upstate.
3. Upstate will contact applicants on this list with further instructions.

After being contacted by Upstate, applicants must:

1. Complete and submit the supplemental application by the stated deadline with the understanding that they will need to submit their spring semester transcript as soon as it is available.
2. Interview with the Admissions Committee at Upstate in Syracuse NY between May and August following the completion of their first year at Binghamton University. Note: Decisions will not be made until Upstate has received spring grades.

Accepted Students

The MCAT requirement for admission into Upstate is waived for individuals that are accepted into the program.

Acceptance into the UAS is binding. Students who apply to other medical schools once accepted into SUNY Upstate will be withdrawn immediately from the UAS.

Accepted students will have the opportunity to participate in summer programming on Upstate's downtown Syracuse campus.

### Continuance in the UAS

Complete graduation requirements for their specific undergraduate Bachelor's degree program. Completion of Medical School prerequisite courses with grades of "B" or higher: Biology 113, 114, 115; General Chemistry 104, 105, 106 (or 107-108); Organic Chemistry 231, 332, 335; Physics 121(or 131), 122 (or 132); Biochemistry BIOL 304 (or 403); Psychology 111; Sociology, and Statistics MATH 147 or PSYC 243.

Carry a minimum of twelve (12) credits each semester.

UAS students must maintain a high level of academic achievement (3.5 grade point cumulative average and a 3.50 grade point semester average in the sciences each semester) and make reasonable progress towards other goals (e.g. research and experiential). The GPA will not be rounded to meet these minimums.

Complete and document 40 hours of volunteer service during the period of enrollment as an undergraduate student at Binghamton University.

For further information, please consult the Upstate Medical website.

### **Binghamton University's School of Pharmacy and Pharmaceutical Sciences Early Assurance Program (PEAP):**

PEAP provides academically exceptional students future admission into the Doctor of Pharmacy (PharmD) program. These students will be able to apply to the PEAP during their first year at Binghamton University. PEAP is designed to guarantee a seat in a future PharmD class *after* completing all prerequisite courses, thereby allowing students more freedom to pursue their academic interests. Binghamton University's School of Pharmacy and Pharmaceutical Sciences (SOPPS) has built this program to allow students the flexibility to choose a path of entry that is best for them. Possible routes include completion of two (2+4) or three (3+4) years of college coursework or a bachelor's degree in four (4+4) years. Students are able to enter the PharmD program upon completion of all prerequisite courses, satisfying the minimum number of 62 college credits, participating in the PharmD interview process, and filling out all application requirements (two letters of recommendation and a personal statement).

First year students admitted in the fall or spring semester are eligible to apply to the PEAP program in the fall and spring semester of their first year. The PEAP application is due February 15<sup>th</sup>. If February 15<sup>th</sup> falls on a weekend, the following Monday will serve as the deadline. First year students admitted in the fall must complete a minimum of two (2) prerequisite courses in their first semester from the following courses. One semester of English (completed or enrolled) is strongly encouraged at the time of application. First year students admitted in the spring, to be eligible, will need to take at least 2 of the prerequisite courses in their first semester at whatever institution they are attending in the fall semester of their first year. Prerequisite courses: CHEM 107 or 111; CHEM 108 or 341; CHEM 231; CHEM 332;

MATH 224+MATH 225; MATH 147 or 148; BIOL 113; BIOL 114, PHYS 121 or 131; WRIT 111; (ECON 160 – see note). Note: Advanced Placement credit and transfer credit can be used to fulfill prerequisite courses. However, students will need to take at least 2 of the prerequisite classes in their first semester at Binghamton University. Please visit the Binghamton University pre-health website for eligibility and application requirements or contact the admissions office of the School of Pharmacy and Pharmaceutical Sciences at [pharmacy@binghamton.edu](mailto:pharmacy@binghamton.edu).

### **Binghamton University's School of Pharmacy and Pharmaceutical Sciences Joint Degree 3+4 Programs**

#### **BA Chemistry + PharmD**

Students have the opportunity to complete both the BA in Chemistry and a doctorate in pharmacy (PharmD) in seven years. Students should see the Harpur College Academic Advising Office for questions regarding the curriculum for the undergraduate degree and prerequisites for pharmacy, and a chemistry faculty advisor for chemistry major requirements. See the School of Pharmacy and Pharmaceutical Sciences for questions regarding the Pharmacy program. Undergraduate credits: 126. Double count credits: 28. Graduate credits: 161.

#### **Biochemistry + PharmD**

Students have the opportunity to complete both the BS in Biochemistry and a doctorate in pharmacy (PharmD) in seven years. Students should see the Harpur College Academic Advising Office for questions regarding the curriculum for the undergraduate degree and prerequisites for pharmacy, and a biochemistry faculty advisor for biochemistry major requirements. See the School of Pharmacy and Pharmaceutical Sciences for questions regarding the Pharmacy program. Undergraduate credits: 126. Double count credits: 28. Graduate credits: 161.

#### **BA Biology + PharmD**

Students have the opportunity to complete both the BA in Biological Sciences and a doctorate in pharmacy (PharmD) in seven years. Students should see the Harpur College Academic Advising Office for questions regarding the curriculum for the undergraduate degree and prerequisites for pharmacy, and a biology faculty advisor for biology major requirements. See the School of Pharmacy and Pharmaceutical Sciences for questions regarding the Pharmacy program. Undergraduate credits: 126. Double count credits: 28. Graduate credits: 161.

### **Binghamton University-Lake Erie College of Osteopathic Medicine Early Acceptance Program (Medicine)**

This program is open to graduating high school seniors who plan to attend Binghamton University and to first- and second-year students already enrolled at Binghamton University. The program is designed to facilitate the admission of Binghamton University students into LECOM's Doctor of Osteopathic Medicine program after completion of their four-year degree at Binghamton University. Application forms are available on the LECOM website (<http://portal.lecom.edu>).

### High School Seniors

High school seniors may apply to the EAP during their senior year prior to matriculation at Binghamton University. They will be evaluated based on their high school GPA, SAT/ACT scores, and the substantive parts of their applications. If they are successful in this phase of the application process, they will be invited to LECOM for an interview. Having a successful interview will qualify the student for provisional acceptance. Once a student's matriculation at Binghamton University is verified and approved, they are considered to be enrolled in Phase 1 (undergraduate education) of the EAP. Current admissions criteria are: SAT composite score  $\geq$  1240/ACT composite score  $\geq$  26 and a high school un-weighted GPA of  $\geq$  3.5. For information about continuance in the program and related matters, please consult the document referenced below.

### Current Students

Current first- and second-year students already enrolled at Binghamton University may apply to the EAP. They will be evaluated based on their college GPA, SAT/ACT scores, and the substantive parts of their applications. If they are successful in this phase of the application process, they will be invited to LECOM for an interview. Having a successful interview will qualify the student for provisional acceptance and they will be considered to be enrolled in Phase 1 (undergraduate education) of the EAP once their participation is approved by Binghamton University. Current admissions criteria are: completion of at least 30 credits as a full-time student, but not having accumulated more than 65 post-secondary credits; a post-secondary cumulative overall GPA of 3.4 or higher with a cumulative science GPA of 3.2 or higher; SAT composite score  $\geq$  1240/ACT composite score  $\geq$  26. For information about continuance in the program and related matters, please consult the document referenced below.

### Additional Information

Additional information about the program can be obtained by consulting the document titled "Early Acceptance Program Student Policy Manual" available from LECOM.

### **Binghamton University-Lake Erie College of Osteopathic Medicine Early Acceptance Program (Dentistry)**

This program is open to graduating high school seniors who plan to attend Binghamton University and to first- and second-year students already enrolled at Binghamton University. The program is designed to facilitate the admission of Binghamton University students into LECOM's Doctor of Dental Medicine program after completion of their four-year degree at Binghamton University. Application forms are available on the LECOM website (<http://portal.lecom.edu>).

### High School Seniors

High school seniors may apply to the EAP during their senior year prior to matriculation at Binghamton University. They will be evaluated based on their high school GPA, SAT/ACT scores, and the substantive parts of their applications. If they are successful in this phase of the application process, they will be invited to LECOM for an interview. Having a successful interview will qualify the student for provisional acceptance. Once a student's matriculation at Binghamton University is verified and approved, they are considered to be enrolled in Phase 1 (undergraduate education) of the EAP. Current admissions criteria are: SAT composite score  $\geq$  1240/ACT composite score  $\geq$  26 and a high school un-weighted GPA of  $\geq$  3.5. For information about continuance in the program and related matters, please consult the document referenced below.

## Current Students

Current first- and second-year students already enrolled at Binghamton University may apply to the EAP. They will be evaluated based on their college GPA, SAT/ACT scores, and the substantive parts of their applications. If they are successful in this phase of the application process, they will be invited to LECOM for an interview. Having a successful interview will qualify the student for provisional acceptance and they will be considered to be enrolled in Phase 1 (undergraduate education) of the EAP once their participation is approved by Binghamton University. Current admissions criteria are: completion of at least 30 credits as a full-time student, but not having accumulated more than 65 post-secondary credits; a post-secondary cumulative overall GPA of 3.4 or higher with a cumulative science GPA of 3.2 or higher; SAT composite score  $\geq 1240$ /ACT composite score  $\geq 26$ . For information about continuance in the program and related matters, please consult the document referenced below.

## Additional Information

Additional information about the program can be obtained by consulting the document titled “Early Acceptance Program Policies for Students Affiliated Institution” available from LECOM.

## **Informational Meeting and Appointments**

There is usually an informational meeting in late fall/early spring semester for students interested in the Special Admissions Programs. The date and time of the meeting will be announced on the listserv.

Students interested in the Upstate Accelerated Scholars Program should plan to meet with the Director of Pre-Health Services prior to December 1 in fall semester.

## **PLACEMENT INFORMATION**

For the Binghamton graduating class of 2022, the following professional schools have the most Binghamton alumni in their entering classes.

### **Medical**

NYIT  
Upstate  
Stony Brook  
Downstate  
Buffalo  
Touro

### **Dental**

Buffalo  
NYU  
Stony Brook  
UPenn  
Columbia

## ADVICE FROM GRADUATING SENIORS

“For most, college is a once in a lifetime opportunity. You don’t want to be standing at your graduation podium with regrets.”

“Take the time to engage and learn in the information in your courses, and more importantly, learn from the people that surround you.”

“Utilizing faculty office hours and tutoring services is really helpful in staying on top of class material and is a great tool for succeeding in class.”

“Start early! It never hurts to look up prerequisite courses and clinical requirements for the field you are interested in.”

“Stay focused on your goal! It may seem like your goal is far away but your time at Binghamton will go extremely fast. Don’t let time slip away.”

“Make a study schedule and stick to it.”

“It is okay to follow your own path. You can get to your ultimate goal multiple ways and it is okay to get to that goal a different way than your peers.

“Utilize Harpur Advising and the Pre-Health Team Advising.”

“Seek out new opportunities. You may discover a new passion.”

8/23