

PRE-HEALTH FRESHMAN-SOPHOMORE HANDBOOK

BY

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TABLE OF CONTENTS

INTRODUCTION	3
FRESHMAN YEAR.....	4
Curriculum	
Scheduling	
Extra-Curricular and Related Activities	
Office Hours and Related Matters	
Student Conduct	
SOPHOMORE YEAR	15
Curriculum	
Summer Programs	
Study Abroad	
Transitions	
SPECIAL PROGRAMS.....	18
Harpur College Summer Physician Mentor Program	
Binghamton University - SUNY Optometry Joint Degree Program	
Binghamton University - Upstate Medical University College of Medicine Early Assurance Program	
Binghamton University-University at Buffalo School of Dental Medicine Early Assurance Program	
Binghamton University’s School of Pharmacy and Pharmaceutical Sciences Early Acceptance Program (PEAP)	
PLACEMENT.....	23
ADVICE FROM GRADUATING SENIORS	23

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 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, Michelle Jones, Associate Director-Harpur Academic Advising and Lead, Pre-Health Advising Team, Jill Seymour, Associate Director-Harpur Advising, and Harpur Advisors Val Carnegie, Celeste Lee, Kevin Curry, Jenna Whittaker, and Corey Konnick. Dr. Langhorne advises juniors, seniors, and alumni, while the other team members advise freshman & sophomore pre-health students. Linda Igo is the pre-health secretary. The Pre-Health Advising Team is further assisted by the Pre-Health Student Advisory Committee, which conducts programming, publishes a monthly *Pre-Health Newsletter*, and whose members serve as peer advisors. Dr. Langhorne and Linda Igo are located in Old Champlain suite G-51, and Michelle Jones, Jill Seymour, Val Carnegie, Celeste Lee, Kevin Curry, Jenna Whittaker, and Corey Konnick, along with the peer advisors are located in Old Champlain 110 (within the Harpur Academic Advising Suite).

The most effective communication tool is the Pre-Health Listserv (PREHLTH-L) which contains postings from the Pre-Health Advising Team.

To sign onto the Pre-Health Listserv, you will need to send the following message to

LISTSERV@LISTSERV.BINGHAMTON.EDU

SUB PREHLTH-L *firstname lastname*

Sometime later you will receive a welcome message from the listserv with basic instructions regarding usage, etc. If you have any difficulty, please send a message to Linda Igo, Pre-Health Secretary (ligo@binghamton.edu) and she will subscribe you manually.

In addition to the interactive topical format found on **PREHLTH-L**, there is information available on the Pre-Health web page. You can access the Pre-Health web page at <http://www.binghamton.edu/pre-health/>. On the web page you will find curriculum guides, as well as, a link to a pdf version of this handbook, should you misplace this copy. In addition, there will be links to some of the more important health professions web pages, student organization web pages, a current events section, and a variety of other information.

Another channel of communication is through the Pre-Health Advising at Binghamton Facebook group, which you can join through your Facebook account. This group provides information about pre-health activities, and also allows you to connect with other pre-health students on campus. It also serves as the archive for information posted on the Pre-Health Listserv. You can find the Facebook group here: <https://www.facebook.com/groups/BinghamtonPreHealth/>

This handbook addresses the needs of freshman and sophomore 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.

FRESHMAN YEAR

Introduction

Freshman year is an exciting time of transition into your role as a college student. Part of this transition as a pre-health freshman is adjusting to a more demanding academic routine than you had in high school. As a pre-health student you will be 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 a bit overwhelming and confusing, with careful planning and the assistance of your academic advisor you can insure that all of your requirements are met by graduation.

Part of careful planning and a successful transition includes developing a balanced schedule. This is especially important in your first two semesters. To achieve this balance 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 two science/math and two non-science/math 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 at Binghamton University. There is, however, a caveat to this discussion, which concerns 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 publications, departmental web pages, and/or the appropriate faculty advisor to determine these requirements. They should **NOT** follow the scheduling practices discussed below. In addition, students should review the Advanced Placement chart and the transfer equivalency tables to avoid duplication of courses.

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

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

Subject	Requirement	Binghamton University Courses
Biological Sciences	Two semesters	BIOL 117 and 118
Inorganic Chemistry	Two semesters	Option A (preferred): CHEM 107 and 108 Option B (for Biochem, chem, physics and biomedical engineering majors): CHEM 111 and 341 You must choose between option A and option B. You may not switch between sequences. <u>CHEM 107 must be taken in the fall and CHEM 108 must be taken in the spring.</u>
Organic Chemistry	Two semesters + Lab	CHEM 231, 332 and 335
Physics	Two semesters	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 physical therapy, and pharmacy. It is strongly recommended that you research your schools of interest and confirm the prerequisites required for your intended programs and schools.

Medicine- Biochemistry: BIOL/BCHM 403, psychology: PSYC 111, statistics: MATH 147 or MATH 148 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: BCHM/BIOL 403. Some dental schools may recommend or require microbiology: BIOL 314 & 326 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, MATH 148 or PSYC 243. Some programs also require microbiology: BIOL 314 & 326 or BIOL 319 & 329, calculus I MATH 224 & 225, and calculus II: MATH 226 & 227.

Pharmacy- Most pharmacy schools require microbiology: BIOL 314 & 326 or BIOL 319 & 329, biochemistry: BCHM/BIOL 403, calculus I: MATH 224 & 225, and calculus II: MATH 226 & 227, statistics: MATH 147 or MATH 148 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 MATH 148 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/BCHM 403, psychology: PSYC 111, statistics: MATH 147 or MATH 148 or PSYC 243. Medical anthropology, ANTH 240, is recommended.

Veterinary Medicine-Most veterinary schools require genetics: BCHM/BIOL 401, microbiology: BIOL 314 & 326 or BIOL 319 & 329, biochemistry: BCHM/BIOL 403, calculus: MATH 224 & 225 and statistics: MATH 147, MATH 148 or PSYC 243. Most schools do not require calculus II.

Additional requirements for master's level health science programs: Due to the different requirements for occupational therapy, physician assistant and dietetics 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 MATH 148 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 MATH 148 or PSYC 243. Most programs require Microbiology: BIOL 314 & 326 or BIOL 319 & 329, Biochemistry: BCHM/BIOL 403. Physics is not typically required.

Dietetics and Nutrition- Human Anatomy & Physiology: BIOL 251 & 347, cell biology: BIOL 311, microbiology: BIOL 314 & 326 or BIOL 319 & 329, Nutrition: HWS/NURS 332 and statistics: MATH 147 or MATH 148 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 such actions. 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 of 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 Advisors 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 for you a more complete picture of your first two years at Binghamton. You will note that CHEM 107-108 is a constant in these schedules because CHEM 107 is only offered in the fall semester and CHEM 108 is only offered in the spring semester. Also, some schedules include idiosyncrasies (e.g. summer courses, transfer courses, AP and H-IB credit) to illustrate how these may impact your individual schedule.

SAMPLE SCHEDULE A

Freshman Year

Fall

CHEM 107
BIOL 117
Non-science
(Non-science)#

Spring

CHEM 108
BIOL 118
Non-science
Non-science

Sophomore 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

Freshman Year

Fall

CHEM 107
Non-science
Non-science
(Non-science)#

Spring

CHEM 108
BIOL 118
Non-science
Non-science

Sophomore Year

Fall

CHEM 231
BIOL 117
Non-science
Non-science

Spring

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

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

SAMPLE SCHEDULE C

Freshman Year

Fall

CHEM 107
MATH 224
MATH 225
Non-science*

Spring

CHEM 108
MATH 148 (see notes p. 3)
Non-science
Non-science

Sophomore

Fall

CHEM 231
BIOL 117
Non-science
Non-science

Spring

CHEM 332
BIOL 118
CHEM 335#
Non-science

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

May be postponed until fall semester of junior year.

SAMPLE SCHEDULE D

Freshman Year

Fall

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

Spring

CHEM 108
BIOL 118
Non-science
Non-science

Sophomore Year

Fall

CHEM 231
BIOL 117
Non-science
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 107 and CHEM 108).

Freshman Year

Fall

CHEM 231
Non-science
Non-science
(Non-science)[§]

Spring

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

Sophomore Year

Fall

BIOL 118
MATH 224
MATH 225
Non-science

Spring

BIOL 117
PSYC 111
Non-science
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. This is quite typical. **However, everyone should have completed all the science requirements (excluding English) by the end of junior year.** The reason for this particular stipulation is that the application process for most doctoral and master's level health professions takes between twelve and fourteen months; the entirety of senior year. In order to participate in the application process, most pre-health students are required to take an admission test in the spring/summer of junior year or early in the fall of senior 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 personal reasons, most students would not want this alternative forced upon them because of poor planning. Pre-health students should be familiar with what particular 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 curriculum.

In addition to the required science courses and courses that may be required for your major or for college requirements/general education requirements, there are several non-science courses which pre-health students have found interesting over the years. Chief among these are medical ethics, a variety of biological anthropology courses, health and wellness studies courses and several courses in the history of medicine. Other courses offered by the English, sociology, and political science departments also 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

In addition to questions about academic preparation for the health professions, 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, the admissions committees at health professions schools expect that you have had some exposure to that profession, other than being a patient, prior to applying. Gaining this exposure can be accomplished in a variety of ways, but it is usually an incremental process occurring over several semesters/years. For example, pre-medical students can begin by being hospital volunteers and perhaps later do a Fleishman Center (CDCI) Internship and/or a summer program, the Summer Physician Mentor Program, and/or the Harpur College Binghamton Area Physician Mentor Program. Service in Harpur's Ferry or other EMT services may also provide exposure.

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. For example, pre-dental students can do a Fleishman Center (CDCI) internship with a local practice or the Binghamton General Hospital Dental Clinic, or 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 volunteer and/or obtain internship or volunteer experience with a veterinarian. The Ross Park Zoo, which is located in the city of Binghamton, often hosts internships for pre-veterinary students through the Fleishman Center. Information about these various options can be found in the Fleishman Center Office/Handshake, in the December *Pre-Health Newsletter*, and on the science department webpages. Yet another source is online information. This latter source may be most beneficial if you are trying to find summer programs outside the New York State area.

Many other health science programs also require students to complete direct patient contact hours. Sometimes, this requirement can be in the thousands. Most health science programs also require a letter of recommendation from a professional in that field. For example, students applying to Physician Assistant (PA) School would need to have a letter of recommendation from a licensed PA. It is important that students begin to seek opportunities to shadow/ volunteer, etc. early in their academic career in order to achieve the amount of hours required for their intended profession and also to have a variety of experiences.

Other

If anything, 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 whatever “required” professional exposure you pursue. 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 very important to maintain a balance between the two types of activities.

In a general sense, you should avoid the “shotgun” approach to these activities. This probably worked for many of 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 health professions admissions committees in the same way as it did undergraduate admissions offices.

Student Organizations

There are several campus organizations which are oriented towards pre-health professions students. While it is not required that you join any of these, participation may broaden your horizons, provide additional opportunities to you, and enable you to learn from the experiences of upper level students. Included among these are the following: Harpur’s Ferry Volunteer Ambulance Service, Charles Drew Minority Pre-Health Society, major based clubs, pre-med association, pre-SOMA, pre-PA society pre-dental club, pre-veterinary society, and a pre-optometry club. There are pre-health/pre-medical fraternities on campus and one or two other pre-health clubs.

Pre-Health Professions Staff

The Pre-Health Professions Advising Team includes Dr. Thomas Langhorne, Director of Pre-Health Services, who advises juniors, seniors and alumni. Michelle Jones, Associate Director of Harpur Advising and Lead, Pre-Health Advising Team advises freshman and sophomore pre-health students as do other team members. Team members include Jill Seymour, Associate Director of Harpur Advising, and the following Harpur Advisors: Val Carnegie, Celeste Lee, Jenna Whittaker, Corey Konnick, and Kevin Curry. Linda Igo, serves as the pre-health secretary. The Pre-Health Advising Team is further assisted by the Pre-Health Student Advisory Committee, who serve as peer advisors.

The Pre-Health Office is currently in two physical locations. Freshmen & sophomore pre-health advising and peer advising are housed within the Harpur College Academic Advising Office in Old Champlain suite 110. Junior, senior, and alumni pre-health advising are located in Old Champlain suite G-51. In order to make your visits to the office more effective, you should heed the following advice. First, consult the web page <http://www.binghamton.edu/pre-health/>. There's a lot of information there, which may answer your questions without a trip to the office. Secondly, you should plan to arrive 5-10 minutes prior to the beginning of walk-ins to insure a viable place in line. Once the list fills, it will be shut down. Remember that the Pre-Health Peer Advisors also have walk in hours and one of them may be able to help with your questions. Finally, please be prepared, to the extent you are able, 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. During certain times of the semester, such as the first week of classes, these hours will be changed to accommodate higher than normal student traffic. These altered office hours will be posted on **PREHLTH-L** and in the check-in area of Old Champlain Hall. Summer hours differ significantly from these.

Pre-Health Juniors, Seniors and Alumni Advising:

Dr. Thomas Langhorne:

Office: Old Champlain Hall suite G-51

Phone number: 607-777-2117

Email: prhealth@binghamton.edu. Please be concise when sending your questions. If you have several, a phone call or a walk-in visit may be more appropriate, since your questions may be related and conversation may bring this out, whereas an e-mail response would not.

Phone-Ins: Monday, Tuesday and Thursday: 10am - 10:30am

Walk-Ins: Tuesday 1pm - 3pm and Wednesday 10am - 12pm

Appointments: Use **Starfish** to make appointments. If you have difficulty please call Linda Igo (607-777-2117) or stop by Old Champlain Hall Monday - Friday 9:30am - 12pm and 1pm - 4:15pm

Linda Igo: Pre-Health Professions Secretary

Office: Old Champlain Hall suite G-51

Phone Number: 607-777-2117

Email: ligo@binghamton.edu

Office hours: Monday – Friday 9:30am – 12pm and 1pm – 4:15pm

Pre-Health Freshman & Sophomore Advising:

Michelle Jones: mdjones@binghamton.edu

Jill Seymour: jseymour@binghamton.edu

Val Carnegie: carnegie@binghamton.edu

Celeste Lee: cjylee@binghamton.edu

Corey Konnick: ckonnick@binghamton.edu

Jenna Whittaker: jwhittak@binghamton.edu

Kevin Curry: kcurry@binghamton.edu

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

Phone number: 607-777-6305

Check Harpur Advising and Pre-Health website for the team's contact information and walk-in schedule.

Appointments: to schedule an appointment, use the **Starfish** system. 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, the listserv, and in the Pre-Health office. Pre-Health Peer Advisors are located within Harpur Academic Advising in Old Champlain room 110.

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

Pre-Health Listserv: PREHLTH-L

To sign onto the Pre-Health Listserv, you will need to send the following message to LISTSERV@LISTSERV.BINGHAMTON.EDU

SUB PREHLTH-L *firstname lastname*

Sometime later you will receive a welcome message from the listserv with basic instructions regarding usage, etc. If you have any difficulty, please send a message to Linda Igo, Pre-Health Secretary (ligo@binghamton.edu) and she will subscribe you manually.

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

Student Advisory Committee

The Pre-Health Student Advisory Committee contains 2-3 student members from each of the three upper division classes (sophomore, junior, senior). The Committee meets regularly with the Pre-Health Professions Advisor for discussion and planning on a variety of fronts. Throughout the course of the year, the Committee will conduct programming, publish a monthly newsletter, and pursue any special agenda items which come to its attention. The Committee Members also serve as peer advisors and hold regular office hours in the Pre-Health office. The names and email addresses of the Committee Members are listed on the Pre-Health web page, appear in each edition of the Pre-Health newsletter and are on the Pre-Health Advising Facebook page. If you have questions about pre-health, you should feel free to contact any member of the Committee. 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 Team members.

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, of course, 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 freshman and sophomore 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.

SOPHOMORE YEAR

Introduction

Sophomore year 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 involved in selecting a major and in clarifying your interest in the health professions. Sophomore year also brings with it the continuation and culmination of course work and activities you began during freshman year. Therefore, only topics which are unique to sophomore year or later will be introduced here, since it is assumed that you are familiar with the material presented in the freshman section.

Curriculum

The curricular discussion presented in the freshman section included information about sophomore 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 senior year, because the pre-health science courses will not overlap with your major requirements as they would with a science major. (Please remember that “pre-health,” “pre-med” or “pre-dental” is not a major).

It is also during sophomore year that those of you pursuing the professions of physical therapy, physician assistant, occupational therapy, pharmacy, and nutrition should obtain a detailed list of the requirements for your chosen profession. 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 specialized summer programs available for pre-health students. Some of these are offered through medical or dental schools, while others are offered through hospitals, research institutes, or the science departments at Binghamton University and other universities. Most of these programs accept applications from both sophomores and juniors, though some are restricted to juniors.

Summer programs fall into three categories: enrichment, experiential, and research. Enrichment programs provide academic support in strengthening a student's background in the sciences as well as exposure to the student's chosen profession. 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 deadline for applications is variable also. Some program deadlines are as early as December 1st, while others are as late as March 15th. Further information about summer programs can be obtained from the Pre-Health Newsletter for December, *PREHLTH-L*, and from the undergraduate bulletin boards and listservs in the science departments. In addition, if you know students who have attended programs in past years, you will be able to obtain information from them. This information is also available on the websites of the host institutions.

Some summer programs will 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. In order to arrange this, you will need to meet with a member of the Pre-Health Advising Team at least once during fall or spring semesters of sophomore year. Please be prepared for your meeting because you will need to accomplish quite a lot in the time allocated to you. Also, remember that requests for letters from the Pre-Health Advising Team require at least four (4) weeks advance notice.

It is also 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 or for any of the early assurance programs in which you might be interested. 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 member of the Pre-Health Student Advisory Committee and by being aware of any programming sponsored by the Pre-Health Office and/or the Pre-Health Student Advisory Committee dealing with freshman or sophomore years, since the topic will surely arise then.

Members of the Student Advisory Committee 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, it requires additional planning for you to do so. If you are interested in spending part or all of junior year or the summer before or after junior year in a study abroad program, you should speak with a member of the Pre-Health Advising Team during fall semester of sophomore year. Typically, shifting required courses to summer session and re-configuring regular session will create a time gap within which it's easy to spend a fall and/or spring semester abroad. Alternatively, it's 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 more lengthy majors (e.g. biochemistry, neuroscience, etc.).

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 college or university in a different part of the United States, 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 that common with study abroad programs.

Junior Year Scholarships

Over the past few years a number of scholarships have been created for pre-health students. Currently there are two scholarships for junior pre-medical students (Edward Thorsen Memorial Scholarship, Melvyn H. Novegrad MD Memorial Scholarship). Students typically apply for these scholarships during spring semester of sophomore year, with the recipients being notified by the end of spring semester. More detailed information about these scholarships, as well as application materials, can be obtained from the Pre-Health web page during spring semester (after March 1st) of sophomore year.

Transitions

Junior 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 some advance information to you there is a special SOPHOMORE MEETING during spring semester. This meeting usually occurs around the middle of the semester and consists of a brief prepared presentation by the Director of Pre-Health Services and members of the Student Advisory Committee followed by a lengthy open period for questions from you. The meeting will be announced on ***PREHLTH-L*** and through posted notices. In order to be prepared for Junior Year, it is important for you to attend this meeting.

The Sophomore Meeting is first of a series of meetings which will continue through senior year. The most important of these, however, are those held during junior year. To insure 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. Please 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 do so since this will affect your ability to make appointments with the Director of Pre-Health Services as a junior or senior. To accomplish this, 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. Although most require that you be a sophomore or junior to participate, there is one in which you may participate as a second semester freshman. Please review this section carefully, so that you are aware of the various programs available to you

Harpur College Summer Physician Mentor Program

The Harpur College Summer Physician Mentor Program is for sophomore and junior students living in the Greater New York City metro area. Applications are available early in spring semester. After screening by a selection committee for maturity, integrity, interest, GPA (3.5 or higher), and perceived gain from the program, students are notified of their placement in early/mid April. The program begins with an orientation held on campus at the end of spring semester. Meeting with your mentor begins in early June, once you have returned home for the summer. For further information, please consult the pre-health 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 to this program as a high school senior, as a second semester freshman, or as a sophomore. Because of the structured nature of the course work and the short time (three years) you will be at Binghamton if accepted into the program, transfer students are not eligible for the program. The details of the application process are given below.

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 1300 (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. Once your application is complete, and you meet the minimum academic criteria stated above, you will be evaluated on the basis of maturity, motivation, community involvement, communication and interpersonal skills, interest in optometry, and having a basic understanding of the optometric profession. If you are successful in this screening, you will be invited for an interview, which is the final step in this phase of the admissions process for the program.

Second Semester Freshmen and Sophomores: Students interested in the JDP also have the opportunity to apply to the program during second semester of freshman year or during sophomore year. The application procedure and requirements are somewhat different for these students. Like the high school seniors you must complete an application on the SUNY Optometry webpage. The selection criteria for acceptance into the program are as follows: submit SAT score 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 courses. In addition, all science and math optometry pre-requisites must be completed with a grade of C (2.0) or higher. You will also be required to submit an essay and to obtain an evaluation letter from Binghamton University's Director of Pre-Health Services. Once your application is complete, and you meet the minimum academic criteria stated above, you will be evaluated on the basis of maturity, motivation, community involvement, communication and interpersonal skills, interest in optometry, and having a basic understanding of the optometric profession. If you are successful in this screening, you will be invited for an interview, which is the final step in this phase of the admissions process for the program.

Concluding Remarks: If you are accepted into the 3/4 Joint Degree Articulation Program, regardless of whether you are accepted directly out of high school or during your freshman or sophomore years, you will be responsible for adhering to several guidelines during your years at Binghamton University. Among these are the following. You must meet at least yearly with a representative of SUNY Optometry. You must meet at least yearly with the Binghamton University 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. Furthermore, all science and math optometry pre-requisites must be completed with a grade of C (2.0) or higher (You will be required to submit a transcript to SUNY Optometry on an annual basis). You will be provided with additional guidelines and instructions at the time of your initial (provisional) acceptance into the program whether upon entry into Binghamton University or following freshman or sophomore years.

During the summer between your sophomore and junior years you must file an application to SUNY Optometry through Optomcas. In addition, by December 30 of your junior year you must take the Optometric Admissions Test (OAT) and attain science and academic average scores above 330, with no individual section score being below 320. You must also shadow at least three doctors of optometry, show evidence of community involvement and obtain a positive evaluation from the Binghamton University Director of Pre-Health Services. Also, you must submit any other material/information required by SUNY Optometry at this time. Once you have submitted all of this material, and passed preliminary screening, you will be invited for a final interview at SUNY Optometry.

SAMPLE CURRICULUM FOR JDP STUDENTS

Freshman Year

Fall Semester		Spring Semester	
BIOL 117 Introductory Biology	4	BIOL 118 Introductory Biology	4
CHEM 107 Introductory Chemistry	4	CHEM 108 Introductory Chemistry	4
English/Social Science/Humanity	4	English/Social Science/Humanity	4
English/Social Science/Humanity	<u>4</u>	English/Social Science/Humanity	<u>4</u>
	16		16

Sophomore Year

CHEM 231 Organic Chemistry I	4	CHEM 332 Organic Chemistry II	4
MATH 224	2	CHEM 335 Organic Chemistry Laboratory	2
MATH 225	2	English/Social Science/Humanity	4
English/Social Science/Humanity	4	BIOL _____*	4
English/Social Science/Humanity	<u>4</u>	Physical Education	<u>1</u>
	16		15

Summer Session

PHYS 121 General Physics I	4	PHYS 122 General Physics II	4
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Junior Year

Course	4	Course	4
MATH 147 or 148 Statistics	4	PSYC 111 General Psychology	4
BIOL _____*	4	BIOL _____*	4
English/Social Science/Humanity	4	English/Social Science/Humanity	<u>4</u>
Physical Education	<u>1</u>		16
	17		

* Three upper level biology courses must be taken at Binghamton University. Students should select from either BIOL 401 or BIOL 311 AND ALSO from either BIOL 351 or BIOL 355. The third class is of the student's own choosing. Students may **not** take histology (BIOL 324), animal physiology (BIOL 331), or neurobiology (BIOL 313).

Binghamton University-SUNY Upstate Medical University College of Medicine Early Assurance Program

This program is open to second semester sophomores only. If accepted, students will be able to spend their last two years at Binghamton without the pressures ordinarily experienced by premedical students during this period of their lives. The criteria for this program are listed below.

1. Applicants must have completed five of eight required premedical science courses, with a minimum GPA of 3.5 in both science and non-science courses and by the end of sophomore year. Applicants should also have attained a score of 1360 or higher on the SAT (math + verbal) or a score of 29 on the ACT.
2. Applicants must complete an application form and submit it, along with SAT scores, a transcript, a processing fee, and any other required material to the College of Medicine prior to July 1st of their sophomore year.
3. Applicants must complete a credentials file in the Pre-Health Office by June 1st of their sophomore year and have their evaluation sent to the College of Medicine. (Pre-Health home page>Applicants>Early Assurance)
4. If accepted, students must maintain a normal course load during their remaining two years, complete the pre-medical requirements, perform well overall (i.e. 3.5 GPA or higher in both science and non-science coursework), and graduate from Binghamton. In addition, students must take the MCAT by August 31 of the year prior to entry and obtain a score of 509 in one sitting for the exam (they will have two opportunities to accomplish this).
5. Students must commit themselves to attend the SUNY-Upstate Medical University College of Medicine upon completion of their degree at Binghamton.

Students interested in the Upstate EAP should obtain an application from the Upstate web page in spring semester. They should make appointments with the Director of Pre-Health Services in fall and spring semesters. During the months of July and August applications and related materials will be examined by the Upstate admissions committee. If you pass this preliminary screening, you will be asked to go to Syracuse for an interview during late August/early September. You will be informed by October 1st of junior year as to whether or not you have been accepted. Questions should be directed to the Director of Pre-Health Services or to Upstate Medical (315-464-4570) or (www.upstate.edu).

Binghamton University-SUNY Buffalo School of Dental Medicine Early Assurance Program

1. This program is designed to assure an undergraduate student an acceptance into dental school after two years of study, thus allowing the completion of the remainder of the four year undergraduate curriculum without concern for admission into dental school. To be eligible for this program a student must have completed two years of undergraduate study (approximately 60 credits) with a GPA of 3.5 or higher in both science and non-science courses and plan to graduate from Binghamton University within two years. Also, they must have completed two of the four required science course sequences. While no specific major is required, the applicant must have completed half of the required pre-dental science course sequences, the English

requirement, and demonstrate maturity and a strong motivation for dentistry. Individuals accepted into the EAP will be required to take the DAT (Dental Admission Test) in their junior year and score at least a 20 on the Academic Average, PAT, and Reading Comprehension sections of the test to remain in the program. These scores must be obtained on the same attempt of the DAT. Also, individuals accepted into the program will be required to maintain at least a 3.7 GPA in both science and non-science courses for continuance in the program. The program also requires that participants have over 100 hours exposure to clinical dentistry, either before acceptance into the program or during their last two years at Binghamton. Applications are due June 1st of sophomore year. The application and credentialing processes for this program are similar to those described above for the medical early assurance program except that the deadline for completion of the credentials file in the Pre-Health Professions Office is **May 1st**. (Pre-Health home page>Applicants>Early Assurance). Interested students should consult with the Director of Pre-Health Services by the end of fall semester. Detailed questions may be addressed to the School of Dental Medicine (716-829-2839 or 716-829-2862). Applications materials should be obtained from the School of Dental Medicine web site.

Binghamton University's School of Pharmacy and Pharmaceutical Sciences Early Acceptance 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 the second semester of their freshman year and enter this pre-pharmacy program. PEAP is designed to free students from the pressures associated with waiting to be accepted into and enter pharmacy school *after* completing all prerequisites, 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. Students are able to enter the PharmD program upon completion of all prerequisite courses and a minimum number of college credits. Possible routes include completion of two or three years of college coursework or a bachelor's degree in four years. Freshman students admitted in the fall semester or spring semester are eligible to apply to the PEAP program in the spring semester of their first year. The PEAP application is due February 15th. If February 15th falls on a weekend, the following Monday will serve as the deadline. Freshman 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. Freshman 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 117; BIOL 118, 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. If a student has Advanced Placement credit for both CHEM 107 and MATH 224 + 225, it is acceptable to take ECON 160 during the first semester. Please visit the Binghamton University pre-health website for eligibility and application requirements.

PLACEMENT INFORMATION

For the Binghamton graduating class of 2016, the following professional schools have the most Binghamton alumni in their entering classes.

Medical

NYIT Osteopathic
Upstate
Downstate
Touro-NY
NY Medical
Einstein

Dental

Buffalo
NYU
Columbia
UPenn

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.”