GUIDE FOR FIRST AND SECOND YEAR PRE-HEALTH STUDENTS 2018-2019
THE JOURNEY FORTH

“In a gentle way, you can shake the world.”

Mahatma Gandhi

There is a purpose behind our lives that propels us toward certain paths. If you are reading this guide, chances are, you endeavor to live a life that extends beyond your own needs. You may feel an inner purpose to help humanity and all living things. Students share many different stories about how they came to this place, how they first embarked on a “pre-health” journey. No story, and no journey, ever looks the same. We are here to support your individual journey.

THIS GUIDE

This guide is designed to help you follow your own path to your chosen healthcare field. There is no guaranteed route for entry into professional schools. All physicians, dentists, veterinarians, and other healthcare providers started where you are today; and just as they are unique in their profession, as students, they held diverse backgrounds, perspectives, interests, talents, skills and experiences. It is important to understand the unifying concepts of what it takes to be successful in gaining admission to a professional school. However, as much as you gain awareness that this a competitive, demanding process, follow your instincts and map your own path in your career pursuit.

We are not here to diminish the challenges ahead. We encourage you to understand the admissions process and requirements. We encourage you to know the Syracuse University Pre-Health Evaluation Committee policy, process and criteria. As advisors, we hope to help inform and guide you along the way. It is up to you to plan, prepare, and prioritize—but we also are here to help you allow for life. Your undergraduate careers only come along once. Reaching your next educational goal matters greatly—but trust that the way to get there is to maximize your productivity and happiness in your undergraduate career first.

A DEVELOPMENTAL PROCESS

Preparing for professional school is a developmental process, which is why the admissions review is so holistic. This is why, during their undergraduate careers, we encourage all pre-health students to:

- Demonstrate intellectual aptitude and curiosity
- Demonstrate a commitment to healthcare
- Contribute to the community
- Build character.

We are here to help you cultivate these attributes, and in doing so, develop agency.

KNOW THE LANDSCAPE

Data exists. It is helpful to understand the admission trends and benchmarks early, so you can prepare accordingly, consistently assess yourself, and, if needed, redirect your strategies and short/long term goals along the way. Eventually, there will be a day that you apply to your professional schools of choice. This is what the landscape looks like:
Matriculant Data for Schools of Allopathic Medicine, 2017-2018

Mean age of first-year MD student is 24.
Mean GPA: 3.7 (3.64 BCPM)
Mean MCAT: 510.4/Percentile Rank 82 (highest possible 528)
Acceptance Rate 2016-2018: roughly 41%
Acceptance Rate for 3.60+ GPA/MCAT 510+ = 78%
Acceptance Rate for 3.40-3.59 GPA/MCAT 502-505=29.3%

Applicant Data for Schools of Osteopathic Medicine 2017-2018

Mean first-year DO student is 24.
Mean GPA: 3.45
Mean MCAT: 501.10 (highest possible 528)
20,836 applicants vying for roughly 7,317 seats (roughly 35%)
DO GPA and MCAT mean is lower, but it is not a “backup” plan.

Summary of data for Schools of Dental Medicine, 2010

Common age first year enrollee: 23-24
12,001 applicants in 2010, 41.2% enrolled
Applicant: 18.2/18.6/18.3 DAT; 3.25 BCPM/3.35 GPA
Matriculant: 19.3/19.6/19.5; 3.47 BCPM/3.53 GPA
DAT scores: Academic Average, Perceptual Ability, Total Science—highest 30 all sections

Matriculant Data for Schools of Veterinary Medicine
ACADEMICS

Simply put, the best academic strategy to “get in” to your professional school is to follow your academic and scholarly interests. There is no specific major, minor, area of research, or academic program that is required by professional schools, other than completing the requisite courses (predominantly sciences.) Although we encourage you to look closely at individual schools’ requirements, there are general patterns.

GENERALLY REQUIRED OR HIGHLY RECOMMENDED COURSES

Dental and Medical school

INTRODUCTORY BIOLOGY I/II (BIO 121/ 123/ 124)
INORGANIC CHEMISTRY I/II (CHE 106/107/ 116/ 117)
ORGANIC CHEMISTRY I/II (CHE 275/ 276/ 325/ 326)
PHYSICS I/II (PHY 101/ 102 OR PHY 211/ 221/ 212/ 222)
BIOCHEMISTRY (BCM 475)
ONE SEMESTER OF CALCULUS OR STATISTICS (MAT 285 OR 295 OR MAT 121 OR 221)

Physician Assistant and Nursing school

INTRODUCTORY BIOLOGY I/II (BIO 121/ 123/ 124)
INORGANIC CHEMISTRY I/II (CHE 106/107/ 116/ 117)
ONE SEMESTER OF ORGANIC CHEMISTRY and/or ONE SEMESTER OF BIOCHEM (CHE 275/ 276, BCM 475)
ANATOMY AND PHYSIOLOGY (BIO 216 OR BIO 316 AND BIO 217 OR 317)
MICROBIOLOGY (BIO 409)
STATISTICS (MAT 121 OR 221)
DEVELOPMENTAL PSYCHOLOGY (PSY 335, 336, OR 337)
DEVELOPMENTAL PERSPECTIVES IN MEDICAL LANGUAGE (CFS 326)

Veterinary school

INTRODUCTORY BIOLOGY I/II (BIO 121/ 123/ 124)
INORGANIC CHEMISTRY I/II (CHE 106/107/ 116/ 117)
ORGANIC CHEMISTRY (CHE 275/ 276/ 325/ 326)
ZOOLOGY OR ANIMAL BEHAVIOR COURSES
BIOCHEMISTRY (BCM 475)
PHYSICS (PHY 101/ 102 OR PHY 211/ 221/ 212/ 222)
STATISTICS (MAT 121 OR 221)
HIGHLY RECOMMENDED (REQUIRED AT SOME SCHOOLS): GENETICS, MICROBIOLOGY

As you cultivate your academic plan at Syracuse University, there are a few things to note. Many programs require expository writing. At Syracuse, the writing studio requirements will fulfill this requirement. Be mindful that at Syracuse, a full year of organic chemistry is a prerequisite for biochemistry. Genetics and cellular biology are prerequisites to microbiology. Courses are offered sequentially per academic year; in other words, the first of a sequence is generally only offered in the fall, and the second of a sequence is generally only offered in the spring. SUNY Environmental School of Science and Forestry courses are accessible to SU students—and many pre-vet students take animal-related sciences at ESF. Courses in psychology, sociology, anthropology, public health, and ethics will
help you adequately prepare for professional exams, interviews, and develop competencies and perspective that will prove to your advantage in professional school and beyond.

RENEE CROWN UNIVERSITY HONORS PROGRAM

The Renée Crown University Honors Program provides a compelling educational experience for accomplished students. Individuals who seek academic challenge and are prepared to invest the extra effort required to meet that challenge will flourish in this demanding and rewarding program.

Syracuse University has had an Honors Program since 1963. In 2002, a gift from the family of Trustee Emerita Renée Crown enabled an ambitious revision of the program to enhance the Honors experience for students from across the University's schools and colleges. The Honors Program engages students through enriched intellectual breadth and depth, written and oral communication, collaborative capacity, global awareness, and civic engagement.

While students pursue their chosen academic course of study in their individual departments, schools, and colleges, they immerse themselves in curricular enrichment and innovative scholarship offered by the Program's seminars, cultural events, and close contact with faculty and other Honors students. The Program is open to qualified students in all of the University's undergraduate schools and colleges.

SU ABROAD

There is a common myth that it is inadvisable to go abroad if you are interested in a career in the health professions. If you have aspirations to strengthen your global awareness and live and study in a different country for a semester or a summer, we encourage you to do so. Share these plans with your pre-health advisor early in your academic career, so we can help you appropriately stagger your sciences, or attend SU Abroad Centers that offer courses in biology or other sciences (for instance, Australia, Stockholm, and Dublin.) If you don’t feel comfortable spending an entire semester abroad, pursue an enriching summer program.

GROWTH & DEVELOPMENT

COMPETENCIES

We encourage all students to pursue enrichment opportunities that will develop self-capacity that is relevant to your chosen healthcare field. Think ahead. For instance, physicians must maintain six competencies, and these are largely applicable to all healthcare fields:

- Practice-based Learning and Improvement
- Patient Care and Procedural Skills
- Systems-based Practice
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism

To break this down further, for instance, premedical students are held to 15 Core Competencies within four domains, and again, these skills are accepted in all healthcare areas:

- Interpersonal (service, social, cultural, teamwork, oral communication)
• **Intrapersonal** (ethical, reliable/dependable, resilient/adaptable, shows capacity for improvement)
• **Thinking & Reasoning Skills** (critical, quantitative, scientific inquiry, written communication)
• **Science Competencies** (living systems, human behavior).

What this means is that what “today” holds is setting priorities. Consider how your academic and enrichment activities will help foster these relevant and expected skills. Think about your four years at Syracuse and beyond. What choices will you make that will lend well to your growth and development?

**EXPERIENTIAL LEARNING**

**CLINICAL**

Clinical awareness is extremely important to professional schools. If you haven’t been “inside the walls” where you were able to witness and participate in healthcare delivery, professional schools may hesitate, and feel skepticism that you understand the career path you aspire to. Shadowing and volunteering, obtaining training and potential certifications, and actively participating in clinical opportunities—where you are directly interfacing with the patient population—are imperative to your development. Syracuse students have the advantage of three nearby hospitals, SUNY Upstate, Crouse and the Veterans Administration Medical Center. In addition, there is a robust system of clinics offered by the Syracuse Community Health Center, and other not-for-profit clinics that serve the disadvantaged local community.

**CAMPUS AND COMMUNITY INVOLVEMENT**

There are many student organizations at Syracuse that are oriented to congregate pre-health students. The Mary Ann Shaw Center for Public and Community Service is an instrumental resource in helping students align their interests with volunteer opportunities in local community agencies. Some academic programs at Syracuse, like public health or public policy, often incorporate experiential learning into their course curriculum.

**DOMESTIC & INTERNATIONAL SERVICE LEARNING**

Not all volunteer endeavors need to be clinical. Students benefit immensely from dedicating their time to community agencies, here and abroad. Students have gained immeasurable skills by volunteering for local non-profits that serve constituent needs in public health, education, refugee resettlement, and youth mentorship and recreational services. During gap years, students may serve for Teach for America, City Year AmeriCorps, the Peace Corps, or other domestic and international organizations. When serving abroad, it is important to vet the program you are participating in. There is ethical controversy about what students are allowed and entitled to do in foreign countries; be mindful that your service abroad is about responsibly meeting the needs of the population; not just serving your own interests, growth and development.

**RESEARCH & SCHOLARSHIP**

Research is everywhere. It exists in public health, sociology, anthropology, English literature, psychology, science, linguistics—in other words, if you are interested in research, find a position in a research project that studies something you intimately care about. At Syracuse, there are multiple avenues to research—for pre-health, these are most popularly in the sciences, psychology, and
neuroscience—but there are a myriad of current research projects related to health policy, public health initiatives, socio-economic healthcare disparities, drug delivery, bioengineering, and post-traumatic stress syndrome. Syracuse is a robust research institution and we strongly encourage students to explore faculty research interests, and pursue a research project or capstone project that elicits passion. If you wish to extend your experience beyond campus, Syracuse students have often pursued research at Upstate or nearby research facilities, and participated in summer SURF or SURP programs, SHPEP, or MedPrep during their undergraduate careers. During gap years, some students enjoy obtaining clinical or laboratory research positions at institutions all across the United States or abroad.

**ADVISING TIMELINE**

Our pre-health advising office is here to support your pre-professional endeavors throughout your undergraduate career. We offer programming, individual visits, speaker series, science fairs and other events to help nurture your awareness about healthcare, expose you to healthcare practitioners, and promote networking. We encourage students to meet us early and visit us throughout their undergraduate career, so that we can provide the best support. The Pre-Health Evaluation Committee provides letters of evaluation (also known as a “committee letter”) to support applicants to medical, dental, podiatric, and ophthalmologic schools. For other professional programs or summer programs, if we get to know you, we will be able to help you select programs that align with your interests, and advocate for you.

**FREQUENTLY ASKED QUESTIONS**

**WHAT SHOULD I MAJOR IN?**

Your choice of a major reflects your personal interests and professional orientation. Base your decision on what you want to learn, not how others will view you. The strength of the academic credentials, rather than the major, is the best predictor of who gains admission to professional schools. You are more likely to succeed at — and benefit from — subjects that interest and stimulate you. Professional schools do not require, recommend, or favor any particular undergraduate major course of study; you can complete the pre-professional requirements while at the same time exploring your own interests. In this way, you exercise the option of discovering an alternative career.

*The Association of American Medical Colleges (AAMC) has stated, “Admission committee members know that medical students can develop the essential skills of acquiring, synthesizing, applying and communicating information through a wide variety of academic disciplines.... Students who select a major area of study solely or primarily because of the perception that it will enhance the chance of acceptance to a school of medicine are not making a decision in their best interest.”*

Despite statements like the above, many students believe that medical schools prefer certain major areas. AAMC’s national data, however, refute this. In 2017, 41% of biological sciences majors, 46% of physical sciences majors, 48% of mathematics and statistics majors, 50% of humanities majors, and 41% of social sciences majors that applied were accepted to medical school. The differences among percentages of acceptance by major are not significant, and major choice cannot be used to predict acceptance to medical school. Of the 51,680 applicants to medical schools in 2017 (for 2018 matriculation), 54.6% were biological sciences majors, 10.3% were social sciences majors, 9.3% were physical sciences majors, 3.4% were humanities majors, and 0.6% were mathematics and statistics.
majors (the remaining 21.8% was made up of specialized health sciences majors and “other” majors, as defined by the AAMC).

**HOW DOES MY MAJOR CHOICE AFFECT MY COURSE CHOICES?**

Those majoring in a science discipline may take one or two science and/or math courses each semester, depending upon the recommendations of academic advisors. However, humanities or social science majors may want to take only one mathematics or science course during the first year in order to be able to experiment with courses from several departments. Over four years, all the course prerequisites are available to all students needing them.

**CAN I TAKE PRE-REQUISITE COURSES AS SUMMER COURSES?**

Required courses may be taken during summer session at Syracuse University or at other universities whose educational standards and rigor are comparable. In general, it is preferable to take these courses during the regular school year in order to demonstrate that you can perform well even while carrying a full course load.

**WHAT IS REQUIRED FOR ADMISSION TO PROFESSIONAL SCHOOLS OUTSIDE OF ACADEMICS?**

You will develop important qualities during your college years. Most important is what one Dean of admissions calls "a sustained commitment to excellence." Becoming a well-educated person with an understanding of human nature, developing the ability to think critically, imaginatively, and logically, and gaining personal competency in several areas outlined by the AAMC will make you a strong candidate. For more information on the core competencies, see the corresponding section in this Guide.

Your activities inside and outside the classroom should develop and strengthen interpersonal and intrapersonal skills, as well as your academic potential. You are not required to pursue activities in all areas, but service and clinical experience are the most important. It is also important to gain experience out of your “comfort zone” which, for many college students is their campus environment.

**CAN I (OR SHOULD I) USE MY ADVANCED PLACEMENT (AP) CREDITS TO COMPLETE PRE-REQUISITES COURSES?**

Some medical schools accept AP credit for pre-requisite coursework if the undergraduate institution granting the degree provided credit for the equivalent courses (i.e. AP Biology credit applied to BIO 121). Students who have AP credits available need to make a decision whether it is in their best interest to move past the introductory courses. Students are strongly encouraged to speak to the undergraduate department offering the introductory courses and to their pre-health advisor regarding AP credit. In some cases, it may be beneficial to forego AP credits, in order to include more college-level credits and grades in the science GPA. Also, students need to be aware that most medical schools require a full year of biology laboratory and chemistry laboratory – even if AP credits were used for the lecture portion of the course.
MYTHBUSTERS

MYTH: IT WILL “LOOK BETTER” TO MEDICAL SCHOOLS IF I DOUBLE MAJOR OR ADD ANOTHER MINOR.

Truth: In fact, an applicant’s primary undergraduate major has little to no effect on acceptance rates to medical school. National data from AMCAS show that if anything, there is a slightly lower acceptance rate for health science majors (34% in 2017) versus other majors such as biology, chemistry, mathematics, or humanities. You should focus on demonstrating excellence in what you choose to do; the best way to do that is to undertake a course of study that is interesting and engaging, whether or not those courses amount to a double major or a minor. An applicant with one major and a 3.6 GPA is certainly more competitive than an applicant with a double major and a 3.2 GPA.

MYTH: A HIGH GPA WILL MAKE UP FOR A LOW MCAT SCORE OR VICE VERSA.

Truth: While academic credentials are certainly an important piece of a student’s application, they are just that, pieces of a bigger picture. Many other factors, including letters of evaluation, letters of recommendation, experiences, personal statement, and personal characteristics, will be evaluated in addition to the academic factors. Admissions committees would, however, question a “mismatch” between GPA and MCAT score (i.e. lower GPA and higher MCAT score or higher GPA and lower MCAT score) as they value academic excellence in all arenas and value test taking skills. Remember, medical education is bookended by standardized exams, the MCAT and the USMLE, and admissions committees need to have the confidence that students will succeed in medical school and beyond.

MYTH: I CAN TAKE CHALLENGING COURSES OVER THE SUMMER OR PLAN LIGHT SEMESTERS TO MAINTAIN A HIGH GPA.

Truth: Medical schools review an applicant’s academic performance as a whole and on a semester-by-semester basis. Students should not plan light semesters with the aim of maintaining a high GPA as schools will note the avoidance of taking challenging courses during the regular semesters or while taking other challenging courses. However, schools may allow some leeway or may be particularly impressed by high achievement during a particularly challenging semester. Students should plan to take pre-requisite courses during the regular semesters, if at all possible.

MYTH: IT DOESN’T MATTER WHEN I GET CLINICAL EXPERIENCE. I CAN DO THIS RIGHT BEFORE I APPLY.

Truth: The motivation for requiring students to gain clinical experience prior to applying to medical school is to ensure that students are committed to the field of medicine and to the service of others. This commitment needs to be sustained and demonstrable through a student’s application. You should be able to answer the question, “Why do you want to be a doctor?” using concrete examples and experiences. It is not enough to have family members or close family friends that are in the medical field. Your experiences need to demonstrate your motivation for this career path; pressure from family or friends is not enough.
MYTH: IF I AM DRIVEN ENOUGH, I WILL BE ADMITTED TO MEDICAL SCHOOL ONE DAY.

Truth: Admission to medical school is an extremely competitive process. In 2017, 51,680 students applied for the 21,338 available first-year seats in medical school, a 41% acceptance rate. Nationally, the average number of applications filed per applicant was almost 16, leading to large numbers of applications filed at each of the medical schools. For example, SUNY Upstate Medical University received 4290 verified applications for 2017 matriculation (for 168 first year seats, 3.9% acceptance rate). Some schools receive many more than that. A strong motivation is not enough to gain admittance to medical school. Because the process is so competitive, students should be prepared with an alternate career path, which may also be in the healthcare field. There are many other careers in healthcare that may be of interest.

MYTH: APPLYING TO MEDICAL SCHOOL IS JUST LIKE APPLYING TO UNDERGRADUATE INSTITUTIONS.

Truth: The application process, including standardized examinations, common application platforms, personal statements, and letters of recommendation, make the two processes seem very similar. In reality, these processes could not be more different. In fact, more than 80% of all undergraduate institutions accept more than half of their applicants, and most applicants receive at least one offer of admission, usually more. In contrast, the acceptance rates to individual medical schools range from less than 1% for private institutions to approximately 3% for in-state applicants to public institutions – in contrast to 4.8% for the most selective undergraduate institution (Curtis School of Music, Philadelphia, PA). Receipt of multiple acceptances, while expected during the process of undergraduate admissions, is much less likely during the medical school application process. Highly competitive students may receive 3-4 offers for admission out of the 16+ schools to which they applied.

MYTH: ADMISSIONS COMMITTEES LOOK UNFAVORABLY UPON TAKING A “GAP” OR “BRIDGE” YEAR.

Truth: Medical schools prefer candidates apply when they are sure about their dedication to the field of medicine and can demonstrate readiness for medical school through academics, experience, and maturity. Many students use the year(s) after graduation to explore career options or to improve their credentials through academic work, clinical experiences, or service opportunities. Medical schools do not look unfavorably upon applying after taking a “gap” or “bridge” year. In fact, the average age of the 2017 entering medical school class was greater than 24 years of age, clearly reflecting that many students apply after a gap year or more.

ABOVE ALL—JUST REMEMBER—WE ARE HERE TO HELP! WE LOOK FORWARD TO SUPPORTING YOU THROUGHOUT YOUR JOURNEY AHEAD.
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APPENDIX A: COURSES OF INTEREST TO PRE-HEALTH STUDENTS

In addition to the many interesting academic programs at Syracuse, including ILMs like Neuroscience and Ethics, we also offer minors in Public Health, Medical Anthropology, and Human Development and Family Science. Irrespective to your major, whether you select an ILM, or complete a minor, there are hundreds of courses at Syracuse that will complement your pre-health interests. The following is a solid list to get you started exploring!

Note: courses are in the College of Arts and Sciences and other schools/colleges

Anthropology courses
ANT 111 Intro to Cultural Anthropology
ANT 121 Peoples and Cultures of the World
ANT 185 Global Encounters: Comparing World Views & Values Cross Culturally
ANT 357 Health, Healing and Culture
ANT 363 Anthropology of Family Life
ANT 415 Culture & Personality
ANT 382 Health in the Middle East
ANT 434 Anthropology of Death
ANT 455 Culture and Aids
ANT 462 Culture and Reproductive Health and Medicine
ANT 463 Global Health
ANT 465 Medical Anthropology
ANT 466 Culture and Sexual Behavior
ANT 467 Culture and Mental Disorders

Sociology Courses
SOC 101 Introduction to Sociology
SOC 102 Social Problems
SOC 281 Sociology of Families
SOC 335 Sociology of Health and Illness
SOC 343 The Deviance Process
SOC 364 Aging and Society
SOC 421 Population Issues

Health and Wellness Courses
HTW 121 Personal and Social Health
HTW 221 Community Health Promotion
HTW 301 Holistic Healing Practices
HTW 302 Influencing Health Behavior
HTW 304 Community Health Education
HTW 305 Community Mental Health
HTW 307 Culturally Competent Health Care
HTW 309 Health Disparities and Underserved Populations
HTW 311 Health Literacy
HTW 401 Epidemiology
HTW 415 Public Health Ethics

Human Development Courses
CFS 202 Family Development
CFS 202 Development/Young Children and Family
CFS 225 Interpersonal Competence
CFS 325 Children and Families in Health Care Setting
CFS 345 The Developing Infant
CFS 363 Midlife Development and Gerontology
CFS 467 Child and Family in Cross Cultural Perspectives
CFS 423 Death, Dying & Loss: Child and Family Perspectives
CFS 458 Science of Caring and Sharing
CFS 482 Development in Immigrant & Refugee Families

**Policy Courses**
- PAF 101 Intro to the Analysis of Public Policy
- PAF 416 Community Problem Solving
- HTW 402 Implementing and Evaluating Health Programs
- HTW 403 Community-Based Health Policy and Research
- HTW 404 Comparative Health Policy

**Ethics Courses**
- PHI 393 Contemporary Ethics
- PHI 398 Medical Ethics
- PHI 493 Contemporary Ethical Issues
- REL 255 Psychology, Spirituality, Love and Ethics
- BIO 300 Stem Cells and Society (cross listed with REL & PHI)
- HTW 436 Ethics in Addiction Services

**Communication and Rhetorical Studies courses**
- CRS 331 Interpersonal Communication
- CRS 225 Public Advocacy
- CRS 430 Intercultural Communication
- CFS 326 Developmental Perspectives in Medical Language
- PAF 410 Interpersonal Conflict Resolution Skills
- PAF 424 Conflict Resolution in Groups

**Critical Inquiry**
- MAX 123 Critical Issues for the United States
- MAX 132 Global Community

**Physical Therapy* or Sports Medicine Interest (minor in Exercise Science in School of Ed)**
- PPE 295 Introduction to Exercise Science
- PPE 385 Motor Behavior Across the Lifespan
- PPE 486 Prevention and Care of Athletic Injuries

**Psychiatry, Clinical Psychology or Counseling**
- PSY 335 Psychology of Childhood
- PSY 336 Psychology of Adolescent
- PSY 337 Psychology of Adult Life
- PSY 445 Behavior Disorders of Children
- PSY 274 Social Psychology
- PSY 382 Health Psychology
- PSY 393 Personality
- PSY 395 Abnormal Psychology
- PSY 415 Introduction to Clinical Psychology
- HTW 407 Motivational Interviewing for Behavioral Change

**Neuroscience:**
- PSY/NEU 223 Introduction to Cognitive Neuroscience
- PSY 322 Cognitive Psychology
- BIO 496 Neuroscience and Society
- BIO 407 Advanced Neuroscience
Courses focusing on Addictions:
HTW 318 Alcohol, Other Drugs, Sex and Gambling: Dynamics of Addiction
HTW 408 Addictions in Cultural Context
HTW 409 The Impact of Addictions on Families and Relationships
PSY 431 Alcohol Use and Abuse
PSY 315 Drugs and Human Behavior

Courses in the “Consortium for Culture and Medicine”
The Consortium for Culture and Medicine (CCM) is a cooperative interdisciplinary program of Le Moyne College, SUNY Upstate Medical University, and Syracuse University.
Culture and Reproductive Health and Medicine
Ethics and the Health Professions
Medical Anthropology in Ecological Perspective
Public Health Ethics

1-Credit Courses
HEA 335 First Aid
HEA 336 CPR
PAF 110 Public Service Practicum
## Premed Curriculum: Sample “Traditional” Timeline

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<th>Pre-Requisite Courses¹</th>
<th>Extracurricular Activities</th>
<th>Application Readiness</th>
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<td><strong>First Year</strong></td>
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| **Fall**             | BIO 121 (General Biology I with Lab)  
CHE 106/107 (General Chemistry I with Lab)  
WRT 105 (Studio 1: Practices of Academic Writing)  
MAT 121/221 or APM 391 (Statistics) or MAT 285/295 (Calculus I)² | • Seek out on-campus resources (advisors, clubs, etc.)  
• Look into research on-campus  
• Setup summer opportunities – clinical and/or community service | • Develop relationships with faculty and other mentors  
• Focus on coursework  
• Attend Orientation for 1st and 2nd year Pre-Health Students hosted by the Pre-Health Advising Office |
| **Spring**           | BIO 123/124 (General Biology II with Lab) OR  
BIO 326 Genetics  
CHE 116/117 (General Chemistry II with Lab)  
MAT 286/296 (Calculus II)³ |                                              |                                                                                        |
| **Sophomore Year**   |                        |                                              |                                                                                        |
| **Fall**             | CHE 275/276 (Organic Chemistry I with Lab)  
BIO 327 (Cell Biology) | • Continue involvement with clubs and service opportunities  
• If interested, join a research lab  
• Setup summer opportunities – clinical and/or community service | • Continue to develop relationships with faculty and other mentors.  
• Continue to focus on coursework.  
• Meet with Pre-Health advisors (after major declaration) |
| **Spring**           | CHE 325/326 (Organic Chemistry II with Lab)  
WRT 205 (Studio 2: Critical Research and Writing) |                                              |                                                                                        |
| **Junior Year**      |                        |                                              |                                                                                        |
| **Fall**             | PHY 101 (Major Concepts of Physics I) OR PHY 211/221 (General Physics I and Lab)  
BCM 475 (Biochemistry) | • Continue involvement with clubs and service opportunities  
• Continue work with research lab  
• Seek out leadership opportunities. | • Attend Pre-Health Evaluation Committee Orientation and submit “Intent to Apply” form  
• Prepare to take the MCAT  
• Prepare personal statement  
• Identify potential sources of letters of recommendation |
| **Spring**           | PHY 102 (Major Concepts of Physics II) or PHY 211/221 (General Physics II and Lab) |                                              |                                                                                        |
| **Summer**           |                        | • Continue summer experiences and service opportunities.  
• Seek out leadership opportunities. | • Complete Health Professions Profile  
• Arrange for submission of letters of recommendation  
• Schedule interview with the Pre-Health Advisors  
• Take MCAT by April/May |

¹ Pre-requisite courses may vary depending on the institution and academic department.
² Calculus I is a common requirement for medical school applications.
³ Calculus II is another common requirement for medical school applications.

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**APPENDIX B: SAMPLE COURSE PLAN AT SYRACUSE UNIVERSITY**
Senior Year

Fall

Complete Major, Minor and Core Requirements

- Continue involvement with clubs and service opportunities
- Continue work with research lab
- Seek out leadership opportunities.

Spring

Complete Major, Minor and Core Requirements

- Prepare for interviews – appropriate dress, travel expenses, mock interviews.
- Prepare letters of interest or intent, as appropriate (always speak with an advisor prior to sending these letters).

...and Beyond

For those accepted, medical school matriculation occurs July-August.

For those who are not accepted, meet with Pre-Health Advisors to develop a plan for re-application or an alternate career path.

1. These are sample course plans that reflect the course offerings and sequences of courses necessary to fulfill most medical schools pre-requisites. Courses, such as mathematics, can be taken in other semesters. Students should take courses when they feel that they can be most successful as GPAs (both overall and science) are very important in the admissions process.

2. Not all medical schools require Calculus but most require statistics. Students should be mindful of major requirements as well as medical school pre-requisites.

3. Medical schools do not require Calculus II but do require a college-level mathematics course. If a student received AP credit for Calculus I or tested out of the course, Calculus II may be advisable, however most schools require Statistics.
### Premed Curriculum: Sample “Gap Year” Timeline (One Gap Year)

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<tr>
<td><strong>Fall</strong></td>
<td>BIO 121 (General Biology I with Lab)  &lt;br&gt; CHE 106/107 (General Chemistry I with Lab)  &lt;br&gt; WRT 105 (Studio 1: Practices of Academic Writing)  &lt;br&gt; MAT 121/221 or APM 391 (Statistics) or MAT 285/295 (Calculus I)</td>
<td>• Seek out on-campus resources (advisors, clubs, etc.)  &lt;br&gt; • Look into research on-campus  &lt;br&gt; • Setup summer opportunities – clinical and/or community service</td>
</tr>
<tr>
<td><strong>Spring</strong></td>
<td>BIO 123/124 (General Biology II with Lab) OR BIO 326 Genetics  &lt;br&gt; CHE 116/117 (General Chemistry II with Lab)  &lt;br&gt; MAT 286/296 (Calculus II)</td>
<td></td>
</tr>
<tr>
<td><strong>Second Year</strong></td>
<td>CHE 275/276 (Organic Chemistry I with Lab)  &lt;br&gt; BIO 327 (Cell Biology)</td>
<td>• Continue involvement with clubs and service opportunities  &lt;br&gt; • If interested, join a research lab  &lt;br&gt; • Setup summer opportunities – clinical and/or community service</td>
</tr>
<tr>
<td><strong>Fall</strong></td>
<td>CHE 325/326 (Organic Chemistry II with Lab)  &lt;br&gt; WRT 205 (Studio 2: Critical Research and Writing)</td>
<td></td>
</tr>
<tr>
<td><strong>Spring</strong></td>
<td>PHY 101 (Major Concepts of Physics I) OR PHY 211/221 (General Physics I and Lab)  &lt;br&gt; BCM 475 (Biochemistry)</td>
<td>• Continue involvement with clubs and service opportunities  &lt;br&gt; • Continue work with research lab  &lt;br&gt; • Seek out leadership opportunities.</td>
</tr>
<tr>
<td><strong>Junior Year</strong></td>
<td>PHY 102 (Major Concepts of Physics II) or PHY 211/221 (General Physics II and Lab)</td>
<td>• Continue summer experiences and service opportunities.  &lt;br&gt; • Seek out leadership opportunities.</td>
</tr>
<tr>
<td><strong>Summer</strong></td>
<td></td>
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</tr>
<tr>
<td>Senior Year</td>
<td>Fall</td>
<td>Complete Medical School Pre-Requisites (if not taken in order shown), Major, Minor and Core Requirements</td>
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<tr>
<td>-------------</td>
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<td>-----------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Continue involvement with clubs and service opportunities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Continue work with research lab</td>
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<tr>
<td></td>
<td></td>
<td>• Seek out leadership opportunities.</td>
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<tr>
<td></td>
<td></td>
<td>• Attend Pre-Health Evaluation Committee Orientation and submit</td>
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<tr>
<td></td>
<td></td>
<td>“Intent to Apply” form</td>
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<tr>
<td></td>
<td></td>
<td>• Prepare personal statement</td>
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<td></td>
<td></td>
<td>• Identify potential sources of letters of recommendation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Register for/take MCAT exam (any time prior to April/May of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Senior Year)</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>Complete Medical School Pre-Requisites (if not taken in order shown), Major, Minor and Core Requirements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Complete Health Professions Profile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Arrange for submission of letters of recommendation</td>
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<tr>
<td></td>
<td></td>
<td>• Schedule interview with the Pre-Health Advisors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Take MCAT by April/May</td>
</tr>
<tr>
<td>...and Beyond</td>
<td></td>
<td>• Complete AMCAS/AACOMAS/AADSAS Applications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Complete supplementary Applications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prepare for Interviews</td>
</tr>
</tbody>
</table>
APPENDIX C: ACADEMIC OPPORTUNITY PROGRAMS AT SYRACUSE

COLLEGIATE SCIENCE AND TECHNOLOGY ENTRY PROGRAM (CSTEP)

Open to students from various backgrounds, CSTEP provides customized strategies for success in all aspects of your life—with a special emphasis on your career plans for pre-med/pre-law, engineering, education, accounting, and more. Alumni of the program have credited CSTEP with providing opportunities to study abroad, fostering personal and professional contacts, and helping them to complete their degree.

UPSTATE LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION (ULSAMP)

The Upstate Louis Stokes Alliance for Minority Participation (ULSAMP). ULSAMP is dedicated to increasing the number of underrepresented minority (African American/Black, Hispanic American/Latino, Native Hawaiian/Pacific Islander and American Indian) students graduating with baccalaureate degrees in the fields of science, technology, engineering and mathematics (STEM). ULSAMP is supported by the National Science Foundation. ULSAMP is a partnership between five four-year institutions and two community colleges in Upstate New York (Syracuse University is lead institution): Clarkson University, Cornell University, Monroe Community College, SUNY Onondaga Community College, Rensselaer Polytechnic Institute and Rochester Institute of Technology. The mission of ULSAMP is to develop the next generation of innovators and grow a workforce highly qualified for a knowledge-based economy that is representative of our nation’s demographics. Since its inception in 2007, 1,928 STEM degrees have been awarded to URM students at ULSAMP institutions.

MCNAIR SCHOLARS PROGRAM

The McNair Scholars Program at Syracuse University is a federally funded TRIO program that prepares high achieving undergraduate students for graduate/doctoral studies with hands-on research, academic services and financial support. The program is designed to provide motivation, encouragement, and support to students from all disciplines. We work closely with participants through their undergraduate requirements; encourage their entrance into graduate programs, and track their progress to successful completion of advanced degrees.
## APPENDIX D: VOLUNTEER OPPORTUNITIES

### LOCAL HOSPITALS

**Crouse Hospital**  
315-470-7571  
**Volunteer programs**

**SUNY Upstate Medical University**  
315-464-5180  
**Volunteer programs**

**VA Medical Center**  
Sheri Valle  
315-425-4898  
**Volunteer programs**

**St. Joseph’s Hospital Health Center**  
315-448-5186  
**Volunteer programs**

### CLINICAL PLACES OF INTEREST

**Syracuse Community Health Center**  
Sheri Owens  
315-476-7921, ext. 2602  
**Volunteer programs**

**American Red Cross of Central New York**  
315-234-2200  
**Volunteer programs**

**Francis House**  
Rea Carver; rcarver@francishouseny.org  
315-475-5422  
**Francis House**

**Amaus Medical Services at Cathedral**  
315-424-1911  
**Amaus Medical Services**

**Loretto Foundation**  
315-413-3272  
**Loretto**

**Ronald McDonald House**  
315-476-1027  
**Ronald McDonald House**

**The Rosamond Gifford Zoo**  
315-435-8511, ext. 112  
**The Rosamond Gifford Zoo**

**Sarah’s Guest House**  
315-475-1747  
http://sarahsguesthouse.org/

### EMS TRAINING IN NEW YORK STATE

**NYS Department of Health**
APPENDIX E: STUDENT ORGANIZATION

Rebecca Lee Pre-Health Society
Phi Delta Epsilon
Syracuse University Ambulance (SUA)
Nutrition Education and Promotion Association
National Alliance on Mental Illness (NAMI) SU
Shadows of Health
Global Medical Brigades
Syracuse Animal Rights Organization
Society for Public Health Education
Active Minds at Syracuse University
Psychology Club
Alpha Chi Sigma-Pi Chemistry Fraternity
Beta Beta Beta Biology Honors Fraternity
National Society of Black Engineers
Society of Women Engineers
Women in Science and Engineering at Syracuse University (WISE)
Engineering World Health
Health and Wellness Club at Syracuse University
MEDLIFE
Society for Conversation Biology, CNY Chapter (at SUNY ESF)
Pre-Vet Club (at SUNY ESF)

For more information about Syracuse University student-run organizations, visit the Office of Student Activities
APPENDIX F: RESEARCH AT SYRACUSE UNIVERSITY

BIOLOGY

As an important part of a student-centered research university, the Biology Department provides instruction on research and offers its undergraduates opportunities to participate in research. Biology faculty that have undergraduate research opportunities are listed below (in alphabetical order), followed by a brief description of their research interests.

David M. Althoff
Evolutionary ecology of species interactions, insect community ecology, molecular ecology, phylogenetics.

Katie M. Becklin
Physiology, ecology, and evolution of species interactions, and their responses to environmental change.

Carlos A. Castañeda
Biochemistry and biophysics of protein structure and dynamics.

Samuel H.P. Chan
Bioenergetics of organelles.

Heather D. Coleman
Plant biotechnology.

Steve Dorus
Evolutionary genetics and genomics of reproductive systems.

Scott Erdman
Eukaryotic cellular organization and differentiation, functional genomics in fungal systems.

Thomas P. Fondy
Physico-chemotherapy of leukemia in cell culture, actin microfilament in cell signaling, cytokinesis as a key target in cancer therapy.

Douglas A. Frank
Plant/ecosystem ecology with emphasis on plant-herbivore interactions.

Jason D. Fridley
Plant ecology and geography, landscape ecology, invasive species, biodiversity.

Jannice Friedman
Plant evolutionary biology, ecological genetics, evolution of plant reproductive systems.

Anthony Garza
Biofilm formation, bacterial development, stress resistance in bacteria.

Paul Gold
Aging, cell signaling and communication; learning, memory, and plasticity; neurological and psychiatric conditions.

Sarah E. Hall
Cellular memory of developmental history in C. elegans.

James Hewett
Neuromodulators and epilepsy; function of arachidonic acid metabolism, Cyclooxygenase-2, and interleukin-1 in the central nervous system.

Sandra Hewett
Mechanisms underlying cell death in the central nervous system: the interplay between excitotoxicity and inflammation.

Robin Jones
Neuroscience; alternatives to traditional teaching approaches and utilization of active learning techniques to help students grasp scientific concepts.
<table>
<thead>
<tr>
<th>Name</th>
<th>Research Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donna L. Korol</td>
<td>Neural mechanisms of learning and memory across the lifespan.</td>
</tr>
<tr>
<td>George M. Langford</td>
<td>Actin cytoskeleton, axonal transport in nerve cells, fungal pathogenesis of epithelial cells.</td>
</tr>
<tr>
<td>Katharine (Kate) Lewis</td>
<td>Specification and patterning of spinal cord interneurons, formation of functional neuronal circuitry, evolution of spinal cord patterning and function, dorsal-ventral neural tube patterning, zebrafish development.</td>
</tr>
<tr>
<td>Zhanjiang (John) Liu</td>
<td>Aquaculture genomics and bioinformatics.</td>
</tr>
<tr>
<td>Jessica MacDonald</td>
<td>Genetic and epigenetic mechanisms regulating neuronal development and function; gene-environment interactions and neurodevelopmental disorders.</td>
</tr>
<tr>
<td>Eleanor Maine</td>
<td>Genetic regulation of development, cell-signaling, germline development, RNA silencing.</td>
</tr>
<tr>
<td>Susan E. Parks</td>
<td>Behavioral ecology, acoustic communication, marine science, conservation biology.</td>
</tr>
<tr>
<td>Melissa E. Pepling</td>
<td>Regulation of mouse oocyte development, hormone signaling in oocyte differentiation.</td>
</tr>
<tr>
<td>Scott Pitnick</td>
<td>Evolution of reproduction and life history traits.</td>
</tr>
<tr>
<td>Ramesh Raina</td>
<td>Genetic and molecular mechanisms regulating plant-pest interactions, functional genomics of cell signaling in plants.</td>
</tr>
<tr>
<td>Surabhi Raina</td>
<td>Molecular basis of plant responses to stresses.</td>
</tr>
<tr>
<td>Mark E. Ritchie</td>
<td>Biodiversity, plant-herbivore interactions, environmental science.</td>
</tr>
<tr>
<td>Kari A. Segraves</td>
<td>Coevolution, mutualism, evolution of plant-insect interactions.</td>
</tr>
<tr>
<td>Robert B. Silver</td>
<td>Cell division, macrophages, secretion of neurotransmitters without membrane fusion (porocytosis), mechanisms of parthenogenetic activation of eggs versus fertilization, energetic materials.</td>
</tr>
<tr>
<td>Roy D. Welch</td>
<td>Molecular aspects of signaling among a homogeneous population of bacteria.</td>
</tr>
<tr>
<td>Michele G. Wheatly</td>
<td>Comparative physiology of decapod crustacea, cellular and molecular biology of epithelial (branchial/renal) ion motive proteins, biocomplexity.</td>
</tr>
<tr>
<td>Jason R. Wiles</td>
<td>Education research in the life and earth sciences with special attention to teaching and learning about biological evolution; science education at all academic levels.</td>
</tr>
<tr>
<td>Torsten Wöllert</td>
<td>Cell and molecular biology of the actin cytoskeleton in health and disease, the function of the actin cytoskeleton in organelle-vesicle transport in axons of nerve cells, cell migration of human epithelial cells.</td>
</tr>
</tbody>
</table>
CHEMISTRY

The department of Chemistry has a number of undergraduate research opportunities available. These hands-on experiences range from theoretical and experimental physical chemistry, to materials and organic synthesis, and discovery of new biochemistry in cells and drugs. Research can be taken for credit via CHE 450 or BCM 460 independent studies, or as summer positions and fellowships.

A number of students work on long-term projects, including a; Senior Thesis, Honors Thesis, or Capstone Project. Undergrads in Chemistry, Biochemistry, Biology, and Engineering majors participate in research in the Chemistry Department. Many of our alumni have presented their research at national conferences, like ACS, or are co-authors on prestigious peer-reviewed publications. Many student researchers go on to do great things as PhD students at universities across the nation, or turn to industry and medical school.

Undergraduate researchers have been exceptionally successful over the past few years, with many being awarded NSF Graduate Fellowships, Amgen Fellowships, Beckman Fellowships, Astronaut Fellowships, and NSF REU and iREU fellowships.

Interested in research? Start early, and find a faculty member who works in an area that interests you. Read a few of their papers, and then set-up an appointment with them to get started. Here is a brief list of faculty who have undergraduate student assistants in their labs:

- Joseph Chaiken
- Weiwei Zheng
- John Franck
- Mathew Maye
- Bruce Hudson
- Jon Zubieta
- Olga Makhlynets

PSYCHOLOGY AND NEUROSCIENCE

<table>
<thead>
<tr>
<th>Laboratory</th>
<th>Faculty Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mind Body Laboratory</td>
<td>Joshua Felver</td>
</tr>
<tr>
<td>Cognitive Science Lab</td>
<td>Mike Laush</td>
</tr>
<tr>
<td>Memory Modeling Lab</td>
<td>Amy Criss</td>
</tr>
<tr>
<td>Cognitive and Decision Science Lab</td>
<td>Lael Schooler</td>
</tr>
<tr>
<td>CARE Lab</td>
<td>Natalie Russo</td>
</tr>
<tr>
<td>Close Relationships Lab</td>
<td>Laura VanderDrift</td>
</tr>
<tr>
<td>Close Relationships and Healthy Living Lab</td>
<td>Brittany Jakubiak</td>
</tr>
<tr>
<td>ADHD Lifespan Treatment, Education and Research (ALTER) Program</td>
<td>Kevin Antshel</td>
</tr>
<tr>
<td>Research Area</td>
<td>Faculty</td>
</tr>
<tr>
<td>---------------------------------------</td>
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</tr>
<tr>
<td>Experimental Biophysics &amp; Biomaterials</td>
<td>Liviu Movileanu</td>
</tr>
<tr>
<td>Theoretical Biophysics &amp; Biomaterials</td>
<td>M. Lisa Manning and Jennifer Schwarz</td>
</tr>
<tr>
<td>Computational Physics</td>
<td>Steven Blusk, Duncan Brown, Simon Catterall, John Laiho, M. Lisa Manning, A. Alan Middleton and Tomasz Skwarnicki</td>
</tr>
<tr>
<td>Experimental Condensed Matter</td>
<td>Matthew LaHaye, Joseph Paulsen, Britton Plourde and Eric Schiff</td>
</tr>
<tr>
<td>Theoretical Condensed Matter</td>
<td>M. Lisa Manning, Jennifer Schwarz and A. Alan Middleton</td>
</tr>
<tr>
<td>Experimental Astrophysics</td>
<td>Gianfranco Vidali</td>
</tr>
<tr>
<td>Gravitational Waves</td>
<td>Duncan Brown, Peter Saulson, Stefan Ballmer</td>
</tr>
<tr>
<td>Experimental High Energy Physics</td>
<td>Marina Artuso, Steven Blusk, Matthew Rudolph, Tomasz Skwarnicki and Sheldon Stone</td>
</tr>
<tr>
<td>Neutrino Physics</td>
<td>Mitchell Soderberg and Denver Whittington</td>
</tr>
<tr>
<td>Medium Energy Physics</td>
<td>Paul Souder and Richard Holmes</td>
</tr>
<tr>
<td>Cosmology</td>
<td>G. Scott Watson</td>
</tr>
<tr>
<td>Particle Theory</td>
<td>Simon Catterall, John Laiho and Jay Hubisz</td>
</tr>
<tr>
<td>Soft Matter Program</td>
<td>M. Lisa Manning, Joseph Paulsen and Jennifer Schwarz</td>
</tr>
</tbody>
</table>
MAXWELL SCHOOL OF CITIZENSHIP AND PUBLIC AFFAIRS

Completed and In-Progress Research at the Syracuse University Aging Studies Institute

**Educational Attainment, Geography, and U.S. Adult Mortality Risk**
Jennifer Karas Montez

**HIV Identifying Pre-Exposure Prophylaxis Barriers with Discrete Choice Experiments**
Andrew London

**Movement for Healthy Aging Initiative**
Janet Wilmoth

**Data Innovations in the Health and Retirement Study.**
Gary Engelhardt

**Improving Communications for Older Hospital Patients with Assistive Listening Devices.**
Karen Doherty

**Explaining Inequalities in Women’s Mortality across U.S. States**
Jennifer Karas Montez

**Heterogeneity in Active Life Expectancy**
Doug Wolf

**National Health and Aging Trends Study**
Doug Wolf

**A Prospective Model of Medicare Cost Trajectories.**
Douglas Wolf

**National Survey of Disability Trends and Dynamics.**
Douglas Wolf

**End of Life Trajectories: A Prospective Model.**
Douglas Wolf

**Aging in Place, Access to Affordable Housing and the Health and Living Arrangements of Older Americans.**
Gary Engelhardt

Maxwell Recent Papers and Publications

Sandra Lane, Author, “Why Are Our Babies Dying?: Pregnancy, Birth and Death in America.”

Maureen Trudelle Schwarz, Author, “I Choose Life: Navajo Perspectives on Medical and Religious Pluralism.”
Jennifer Karas Montez, Co-Author, “Education and Health Disparity Across the US.”
Shannon Monnat, “The Opioid Crisis in Rural and Small Town America.”
The Exercise Science Department research effort centers on the investigation of health related aspects of exercise. Department faculty research is integrative and allows for study at the cellular, tissue, and whole organism level. General research interests of faculty in the Exercise Science Department include:

- Anti-inflammatory effects of exercise
- Effect of gene and environmental interactions on human athletic ability, health and disease
- Skeletal muscle adaptations to disuse and aging
- Obesity and Diabetes
- Physical activity promotion for individuals with disabilities and their families (Kinesiology for Individuals with Disabilities)

The Exercise Science Department also collaborates with the SUNY Upstate Medical University. Collaborative research, clinical and educational opportunities are available for our students through SUNY UMU as well. The Institute for Human Performance, part of the SUNY UMU campus, is a 40,000 square foot facility of dedicated laboratory space for research in Human Performance. The Exercise Science Department shares some research space in the IHP and collaborates on several research projects. Considering the joint faculty expertise and the available facilities, in the Exercise Science Department at Syracuse University, and at SUNY Upstate Medical University, the possibilities for students to pursue high quality, innovative work in applied exercise physiology are limited only by one's own imagination!
APPENDIX G: COMMITTEE POLICY AND PROCESS

BRIEF OVERVIEW OF PRE-HEALTH EVALUATION COMMITTEE PROCESS

Medical and dental school admissions committees seek the inclusion of a committee letter from any existing health professions evaluation committees at undergraduate institutions. Committee letters provide testimony of a student’s qualifications in the areas of academic preparedness, clinical exposure, volunteer and community service, research participation, and personal motivation and character. Our Pre-Health Evaluation Committee rates students in the form of a committee letter with supporting letters of recommendation.

<table>
<thead>
<tr>
<th>Course</th>
<th>Course at Syracuse University***</th>
<th>Required for professional school*</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two semesters Biology</td>
<td>BIO 121 and 123/124 (Certain majors may be exempt from 123/124; but student must complete additional Biology lab credit hours)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Two semesters Chemistry</td>
<td>CHE 106/107 and CHE 116/117 (prereq: CHE 106/107)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Organic Chemistry with Lab</td>
<td>CHE 275/276 (prereq: CHE 116/CHE 117) and CHE 325/326 (prereq: CHE 275/276)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Physics with Lab</td>
<td>PHY 101 and PHY 102 or PHY 211/221 and PHY 212/222</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Genetics</td>
<td>BIO 326</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Cell Biology</td>
<td>BIO 327</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>BCM 475 (prereq: CHE 325, BIO 326 and BIO 327 recommended)</td>
<td>Varies</td>
<td>Yes</td>
</tr>
<tr>
<td>General Microbiology</td>
<td>BIO 409 (prereq: BIO 326 and BIO 327)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>One semester Math</td>
<td>Ex: MAT 285 or MAT 286 (prereq: MAT 285) or MAT 295 or MAT 296 (prereq: MAT 295)** MAT 121, MAT 221, PSY 252, APM 391</td>
<td>Varies</td>
<td></td>
</tr>
<tr>
<td>Expository Writing</td>
<td>WRT 105 and WRT 205</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Social Sciences</td>
<td>examples: PSY 205; SOC 101, 102; ANT 111, 121, 462, 463; MAX 123, 132</td>
<td>Varies</td>
<td>Yes</td>
</tr>
<tr>
<td>Public Health and Ethics</td>
<td>examples: HTW 307, 309, 401; ANT/HTW 463; PHI 398, PHI 593; HTW 415</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Individual schools vary; check requirements for schools to which you plan to apply (Not all schools require Biochemistry or specific social sciences; Math requirements vary; Introductory Biology may not be required for those with adequate upper division Biology credits.)

**Precalculus is recommended before Calculus first for those whose placement exam results do not include Calculus

*** SUNY ESF and transfer students may fulfill course requirements through courses with different titles but equivalent content
APPENDIX H: ABROAD PROGRAMS WITH PRE-HEALTH ORIENTATION

American University Nairobi: Public Health - Nairobi, Kenya

Includes study and an internship or independent research project at Nairobi University and the Turkana Basin Institute.

SEA Semester - Woods Hole, Massachusetts, and various locations

Spend six weeks on land and six weeks at sea studying chemistry, biology, physics, and geology of the oceans, as well as designing your own research project.

SIT India: Health and Human Rights - New Delhi, India

Explore the links between public health and human rights with a focus on marginalized and vulnerable populations.

Biology Courses typically offered at Centers in Australia, Ireland and Sweden include:

**Stockholm**
- Immunology and Infectious Diseases
- Neurodegenerative Diseases
- Translational Medicine: From Bench to Bedside

**Dublin**
- An Introduction to Physiology: Human Cells and Tissue
- Bioinformatics
- Clinical Human Anatomy
- Developmental Biology
- Immunology
- Intro to Neurophysiology & Endocrine Physiology
- Metabolism, Immunity, & Infection
- Molecular Genetics and Biotechnology

**Queensland**
- Animal Anatomy & Physiology
- Animal Breeding & Genetics
- Australia’s Marine Environment
- Australia’s Terrestrial Environment
- Biochemistry & Molecular Biology
- Brain to Behavior
- Conservation
- Coral Reefs
- Developmental Neurology
- Marine Plants, Algae, and Microbiology
- Molecular Microbiology
- Neuromechanics of Human Movement
- Physical-biological Oceanography
- Plant Adaptation & Global Changes
APPENDIX I: IMPORTANT RESOURCES

Association of American Medical Colleges (AAMC)
American Association of Veterinary Medicine (AVMC)
American Veterinary Medical Association (AVMA)
American Dental Association (ADA)
American Dental Education Association (ADEA)
American Academy of Physician Assistants (APA)
National Institutes of Health (NIH)

PRE-HEALTH ADVISING AT SYRACUSE
APPENDIX J: GOOD READS AND NEWS SOURCES

GOOD READS

“Body of Work: Meditations on Mortality from the Human Anatomy Lab” by Christine Montross

“Soul of a Doctor: Harvard Medical Students Face Life and Death”

“How We Die: Reflections of Life’s Final Chapter” by Dr. Sherwin Nuland

“The Immortal Life of Henrietta Lacks” by Rebecca Skloot

“Teeth” by Mary Otto

“The Good Doctor” by Barron H. Lerner

“Mountains Beyond Mountains” by Tracy Kidder

“The Spirit Catches You and You Fall Down” by Anne Fadiman

“How Doctors Think” by Gerome Groopman

“When Breath Becomes Air” by Paul Kalanithi

“Being Mortal: Medicine and What Matters in the End” and “Complications” by Atul Gawande

“Black Man in a White Coat: A Doctor’s Reflection on Race and Medicine” by Damon Tweedy


“Slow Medicine: The Way to Healing” by Victoria Sweet

“Do No Harm: Stories of Life, Death and Brain Surgery” by Henry Marsh

“The Healing of America: A Global Quest for Better, Cheaper, and Fairer Healthcare” by T.R. Reid

“The Man who Mistook his Wife for a Hat” and “Hallucinations” by Oliver Sacks

“How We Die: Reflections on Life’s Final Chapter” and “The Uncertain Art: Thoughts of a Life in Medicine” by Sherwin Nuland

“My Own Country: A Doctor’s Story” by Abraham Verghese

“The Emperor of All Maladies: A Biography of Cancer” by Siddhartha Mukherjee


“The Bad Doctor: The Troubled Life and Times of Dr. Iwan James” (Graphic Novel) by Roberta B. Williams

“Mothers Helping Mothers Fight HIV” (TED Talk) by Mitchell Besser

Our thanks to the many students, advisors and practitioners who have always recommended good reads!
NEWS SOURCES

New York Times Science
The New Yorker: Atul Gwande columnist
The Wall Street Journal Healthcare News
National Public Radio Science Friday
Journal of American Medical Association
American Medical Association Journal of Ethics
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