Pre-Health Professions Handbook

Auburn Montgomery Health Sciences
Goodwyn Hall

Website:
http://www.sciences.aum.edu/pre-professional-programs
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This Pre-Health Professions Handbook serves to help students become well prepared and well informed about requirements and recommendations for successful entry into professional school. It should not substitute for visiting our office and connecting with your Advisor. Please keep this booklet as a reference guide.
To speak to the AUM Health Sciences Advisor call 244-3694.
Most students do not apply to health professional schools until the summer following their junior year. Successful students, however, begin carefully considering and planning their application to professional school as soon as they begin their undergraduate education. This booklet, updated every summer, has been put together to assist you as you work to achieve your goal. Most health professional schools require the same undergraduate prerequisite courses which must be completed prior to applying to professional school. Pre-health students should start their required science courses in the first college year and should work closely with advisors to plan their program of study. The professions vary slightly in the required coursework and, in addition, most professional schools require some type of standardized admission test, a working knowledge of the profession in which you are interested, and participation in community service. The following timeline assumes students wish to matriculate in professional school immediately following graduation.

**First-Year**
- Register with Health Sciences Advisor
- Provide your AUM email to advisor for inclusion on prehealth distribution list
- Focus on succeeding in your coursework, getting good grades and a good academic start
- Register for BIOL 0950 Orientation for Medical Sciences for first-year students (fall only).
- Attend AED meetings and seminars to gain info on the various health careers.
- Make summer plans for health care exposure.

**Summer I**
- Plan early how you will be spending the summer; seek out paid/volunteer positions in your area of interest.
- Attend summer school if absolutely necessary.

**Sophomore Year**
- Volunteer in the community in order to get hours of community service.
- Participate in an internship or research program or work in your area of interest (hospitals, geriatric homes, veterinary clinics, dental offices, optometry clinics, etc.).
- Get involved on the campus; develop your team and leadership skills.
- Start thinking about who to ask for recommendations.

**Summer II**
- If you have not already done so, begin preparing for admission tests (MCAT, DAT, GRE, OAT, and PCAT).
- Participate in an internship, work/volunteer, or research in your interest area.
Junior Year

- Complete courses required by health professional schools (i.e., physics)
- Continue studying for admission tests and plan to take these tests in early to late spring.
- Seek leadership opportunities with AED or other campus organizations that allow you to do so.
- Continue with your volunteer/internship/research/work experiences. Assume leadership roles.
- Meet with your advisor to discuss letters of recommendation and schools to which you will be applying.

Summer III

- Participate in an internship, work/volunteer, or research in your interest area.
- Begin the (centralized) application process when these applications become available online (spring/early summer, i.e., May/June).

Senior Year

- Continue with health-related experience and/or research
- Prepare for interviews.
- If necessary, retake admissions tests in time to meet application deadlines.
- Research schools you are interested in, and/or planning to interview with.
- Stay informed about issues related to your interests: managed care, medical education, current events, bioethics issues, research/technology trends.
- Stay focused! Complete your major requirements.
- Complete secondary applications within two weeks of receiving them.
- Keep your advisor posted on your progress.

CHOICE OF MAJOR

Medical schools do not prefer any specific major over another. Any major is appropriate as long as it is flexible enough to allow completion of all pre-medical requirements. Choose a major according to your strengths and interests. Because there are more qualified applicants than there are spaces available in medical school, a selected major should provide a basis for alternative career choices, if necessary.
REQUIRED PRE-MEDICAL COURSES

All required pre-medical courses must be taken for a grade. Courses identified as prerequisites for medical school cannot be taken as a transient student at another institution. This is because health professions schools prefer that prerequisite courses and difficult sciences be taken at the student’s primary institution to avoid the perception of shopping around for easier courses at other institutions.

The basic course prerequisites for the majority of health professions schools include the following:

a. Chemistry (2 years):
   1. General Chemistry (1 year): CHEM 1100 and 1101; CHEM 1200 and 1201. It is suggested that this series be completed the freshman year if you have the necessary math prerequisites. If you have not had any high school chemistry, PSCI 1200 and 1201 are recommended before beginning CHEM 1100.
   2. Organic Chemistry (1 year): CHEM 3100 and 3101; CHEM 3200 and 3201. It is suggested that this series be completed the junior year.
   3. Biochemistry: CHEM 3300/3301. It is suggested that this course be completed during the junior year.

b. Physics (1 year): PHYS 2100 and 2101; PHYS 2200 and 2201. It is suggested that this series be completed by the end of the sophomore year.

c. Mathematics
   The number and type of required math courses varies among schools. Most medical schools require two-three math courses. Calculus is often highly recommended.
   Pre-health students at AUM must complete 1) MATH 1150 Precal Alg w/Trig and 1610 Cal I (or 1510 Survey of Calculus).

d. Biology
   Most medical schools require a year of general biology or at least a full year of biology courses with labs beyond AP credit. The following courses have been specifically chosen because they are required by most medical schools or they cover material the student needs to know to prepare for the MCAT and/or medical school. See your advisor to plan which courses are best for you.
   BIOL 1010 and 1011 Principles of Biology I
   BIOL 1020 and 1021 Principles of Biology II
   BIOL 2010 and 2011 General Microbiology
   BIOL 2013 Botany
   BIOL 2033 Zoology
   BIOL 2100 and 2101 Human Anatomy and Physiology I
   BIOL 2110 and 2111 Human Anatomy and Physiology II
   BIOL 3303 Genetics
   BIOL 4073 Immunobiology
BIOL 4103 Developmental Biology
BIOL 4153 Vertebrate Physiology
BIOL 4343 Histology
BIOL 4353 Cell Biology
BIOL 4403 Human Genetics
BIOL 4603 Molecular Genetics
BIOL 4753 Endocrinology

e. English
1. English Composition: two semesters of English Composition (ENGL 1010 and ENGL 1020) are required.
2. Literature: Literature requirements vary among medical schools. To satisfy the literature requirement for medical schools and AUM and to prepare more thoroughly for the essay portion of the MCAT, it is recommended that the student complete two literature courses. The student may choose from the following courses: ENGL 2530 and 2540; ENGL 2570 and 2580; or ENGL 2600 and 2610.
3. In preparation for the essay portion of the MCAT and the personal essay included in the AMCAS application, it is recommended that the pre-med student complete ENGL 3050-Advanced Expository Writing one or two semesters prior to taking the MCAT.

f. Social Sciences and Humanities
The MCAT will change in 2015. Addition of the social and behavioral sciences section to include Psychological, Social, and Biological Foundations of Behaviors will take place. The importance of socio-cultural and behavioral determinants of health and health outcomes has become highly recognized in the field of medicine. The additions to the MCAT 2015 are inclusive of concepts relating to introduction to psychology and sociology as well as knowledge of biochemistry. Therefore, courses in these disciplines are strongly encouraged.

g. Additional requirements and profiles of individual schools can be found in the book, Medical School Admissions Requirements (MSAR), published annually by the AAMC. You are encouraged to purchase this publication early in your pre-medical education. Medical School Admissions Requirements may be ordered from the Association of American Medical Colleges, Membership and Publication Orders, 2450 N Street, N.W., Washington, D.C. 20037. Telephone: 202-828-0416; fax: 202-828-1123; www.aamc.org. You may also view a copy of this book in your advisor's office.

COURSES IN THE MAJOR
In addition to the above required pre-medical courses, a student must satisfy the core courses required by his/her major area of study. See your advisor for a listing of these courses.
ADDITIONAL SUGGESTED COURSES
The following list includes additional suggested courses that a pre-medical student
might take. Some of these courses might be required in the core curriculum.

BIOL 4013 Medical Microbiology (Pre-pharmacy students instead of BIOL 2010)
Animal Nutrition (Pre-vet applying to Auburn or Tuskegee)
BIOL 0950 Orientation for Medical Sciences
COMM 1010 Introduction to Human Communication
ECON 2010 Economics I- Micro
ECON 2020 Economics II- Macro
GERO 4400 An Introduction to Gerontology
GEOG 2050 Geography of World Regions
GEOG 2150 Cultural Geography
PHED 4363 Emergency Medical Care
HIST 1010 World History to 1648
HIST 1020 World History since 1648
HIST 2010 U.S. History to 1877
HIST 2020 U.S. History since 1877
PSYC 2110 General Introductory Psychology
PHIL 2000 Reasoning and Critical Thinking
PHIL 2100 Ethics
POLI 2020 Institutions of American State and National Government
SOCI 2000 Introduction to Sociology
SOCI 2250 Human Sexuality
SOCI 3250 Medical Sociology
PHED 2010 Foundations of Health and Physical Education

Honors Program courses

5. CLEP CREDIT, CORRESPONDENCE STUDY, AP CREDIT, REPEATS, WITHDRAWALS

a. CLEP credit - The College Level Examinations Program cannot be used to waive most medical school prerequisites.

b. AP Credit - Students who have enrolled in high school Advanced Placement will find themselves better prepared for work at the college level and completion of required courses without taking introductory classes. Students should contact individual departments regarding their scores and placement in the appropriate course level. To fulfill specific pre-medical requirements, students often must take courses beyond introductory classes waived by AP credit. Your advisor should be consulted concerning the use of AP credit for required pre-medical courses.

c. Repeats -On most health school applications, all courses (including repeated courses) will be counted in the GPA calculated. It is usually not suggested that courses be repeated unless the grade was below a C or the student needs to
gain a better understanding of the material before taking the next course in the same subject.
Consult with your advisor before repeating courses.

d. Withdrawals - It is suggested that a student avoid acquiring any W grades on his/her transcript. If you must withdraw from a class, you should do so prior to the day designated as the 5th day of class. By so doing, the course(s) dropped will be deleted from the record. Any courses dropped after this date will show on the transcript with a W grade. In this situation, you should be prepared to have an extraordinary reason for withdrawal when questioned by the medical school admissions committee about the withdrawal.

6. EXTRACURRICULAR ACTIVITIES
It is strongly recommended that you become involved in extracurricular activities. Possibilities include student government, student organizations, sports, campus activities, outside employment, research experience in a laboratory, hospital work (paid or volunteer), and volunteer and community service projects. AUM has an active chapter of the Pre-Health Honor Society, Alpha Epsilon Delta (AED), which hosts lectures and special events throughout the year. All pre-medical students should become active in AED. Although extracurricular activities are encouraged, the pre-med student should avoid becoming involved in so many activities that grades suffer. Medical schools seek well-rounded individuals with a variety of interests and an awareness of the medical profession. No one particular activity is preferred over another. You are encouraged to participate in activities that interest you. Activities which demonstrate leadership, organization and communication skills, and service are most desirable. In order to make a well-informed career decision, pre-med students should also seek first-hand exposure to the field of medicine and become knowledgeable about the current issues facing the profession.

7. ADVISING
The pre-medical advisor is a key resource in your journey to post baccalaureate education. You should meet with him/her every semester during pre-registration to plan your class schedule and to keep up to date on admissions requirements, application procedures, etc. Advisors’ office hours are accessible through advisortrac. Check the pre-health bulletin board on the 3rd floor of Goodwyn Hall for news or events of interest to pre-meds.

8. MINORITY MEDICAL EDUCATION PROGRAM
Several universities participate in the Minority Medical Education Program (MMEP) which is designed to better prepare promising, highly motivated minority (African Americans, Mexican Americans, mainland Puerto Ricans, and American Indian/Alaska Natives) students for admission to medical school, matriculation, graduation, and future medical practice. These universities offer summer programs for rising sophomores, juniors, and seniors. Housing and living expenses are provided. Students interested in applying for acceptance into this program should see your advisor or contact the program’s website at http://www.aamc.org/students/minorities.
9. APPLICATION PROCESS
Normally, the application process begins in the spring of or summer following the junior year. Medical schools admit students once a year for the entering class which starts in the late summer or fall. Candidates must take the MCAT and submit an application one year in advance of the year that they plan to matriculate. The procedure for application is as follows:

a. Take the MCAT (Medical College Admissions Test) when you have completed the courses required by the medical schools to which you are applying, usually in either April of your junior year or the August before your senior year. Most medical schools suggest that you take the test in April so that you have a chance to repeat it in the event that the April scores are low. If you apply for early decision, you must take the MCAT in April in order for your scores to reach the medical schools before the early decision deadline date of August 1. If you do not apply for early decision, you may take the exam in April or August. Often students do not feel sufficiently prepared or have not completed the required courses to take the MCAT in April and choose instead to take it in August. No matter which date you choose, extensive preparation before taking the MCAT can make a significant difference in your scores. It is recommended that you study at least 250 hours during the 2-3 month period prior to the time that you take the MCAT. You may study independently or take a review course.

The MCAT 2015 exam has four sections, and a separate score will be reported for each, in addition to a total score.

The new test sections are:

- Biological and Biochemical Foundations of Living Systems,
- Chemical and Physical Foundations of Biological Systems,
- Psychological, Social and Biological Foundations of Behavior, and
- Critical Analysis and Reasoning Skills.

As you plan your curriculum, you should be aware that in order to score competitively on the MCAT, all Pre-med science courses plus substantial work in non-science areas (especially composition/writing) should be completed prior to the examination. The exam may be repeated, but the best strategy is to prepare thoroughly and aim to take the MCAT only once. Because your scores are permanently recorded and most medical schools require that all scores be reported to them, it is not wise to take the MCAT just to see what the test is like.

b. Apply to most allopathic schools of your choice using AMCAS (American Medical College Application Service). This is an application service used by most medical schools. A few schools are not members of AMCAS and require their own individual
applications. The AMCAS application is completed online and AMCAS begins accepting applications June 1. Because most schools use a rolling admission process, it will enhance your chances if you submit your application early during the summer regardless of whether you plan to take the April or August MCAT. The AMCAS application deadline for early decision is August 1. Other AMCAS application deadlines are in October.

c. Apply to the osteopathic medical schools of your choice using AACOMAS (American Association of Colleges of Osteopathic Medicine Application Service). This is an application service used by all osteopathic medical schools. The application is completed online and AACOMAS begins accepting applications June 1.

Different schools have different deadlines for the receipt of application materials. Because most schools make admissions decisions on a rolling basis, it will enhance your chances if you submit your application early in the summer regardless of whether you plan to take the April or August MCAT.

VOLUNTEER/EMPLOYMENT OPPORTUNITIES

Medical

There are many opportunities for a student to gain health-related experience through volunteer work or employment. The best opportunities are those which allow the student to have some degree of patient contact. The following list provides a selection of possible opportunities:

a. Medical Outreach Ministries Family Health Center
b. Red Cross
c. Baptist Medical Centers
d. Jackson Hospital
e. Nursing homes
f. Hospice of Montgomery
g. Hospice-Baptist Medical Center
h. Cancer Care Center of Montgomery
i. Cancer Care Center of Prattville
j. Montgomery Cancer Center

Non-Medical

k. Father Purcell's Memorial Center
l. Family Sunshine Center
m. Nellie Burge Community Center
n. Salvation Army
o. Habitat for Humanity
Health Professions School Application Procedure at AUM (Most of this information is applicable to all health professions schools, but some info applies to medical school only. Contact your health science advisor for specific information about your program.)

Normally, the application process begins in the spring of the junior year. Most health professions schools admit students once a year for the entering class which usually begins in late summer or early Fall. Candidates must take admissions tests and submit an application one year in advance of the year that they plan to enter school. The following list includes items that are your responsibility regarding your application:

1. Early in the Spring Semester (January/February) of the year that you apply to medical school, write your personal essay which is to be included with your application. Have several faculty members or colleagues, read your essay for content, grammar, punctuation, etc.

2. Beginning in January, make arrangements for letters of recommendation. For premedical, dental and optometry students, obtain a Health Professions Advisory Committee Applicant Packet from your advisor, complete the forms and return to the advisor by the established deadline. Students must make arrangements to be interviewed by each member of the Health Professions Advisory Committee. The committee is typically composed of 4-6 science and non-science faculty. Contact your advisor to initiate the committee process. Following completion of all interviews, the committee will write a composite letter of recommendation for you for the medical schools to which you apply (refer to step 10).

3. Obtain an unofficial copy of all of your transcripts. Check to make sure that the transcript(s) is (are) correct.

4. In May, begin working on your AMCAS/AACOMAS application. Notify your advisor when you have completed your application and are ready to submit it. Applications may be submitted between June 1 and December. It is suggested that you have the application ready for submission as soon after June 1 as is possible. AMCAS/AACOMAS processes the applications and checks for errors/omissions as they arrive. The applications are then forwarded to the medical schools to which you
are applying. The earlier AMCAS/AACOMAS receive your application, the sooner they will process it. If there are any mistakes/omissions on your AMCAS/AACOMAS application, processing will take longer.

6. Arrange for approximately two additional letters of recommendation (the exact number varies among medical schools) from people with whom you are well acquainted inside or outside of the university. You might wish to ask a professor, former employer, mentor, medical professional, etc. to write a letter. These letters should be confidential.

7. Notify your advisor and your other references when the medical schools to which you have applied request your secondary information. Ask him and your other references to forward your recommendation letters to the schools requesting them.

8. Once your application at a medical school is complete, you may be invited for an interview. Most interviews take place between October and March.

9. Wait for notification of an acceptance decision. Most schools notify their applicants between November and April. Currently, admitted applicants average a 3.5 GPA and 10-11 on each of the multiple choice sections of the MCAT.

10. Some schools currently participate in an Early Decision program where a student with a minimum GPA above 3.5 and an MCAT profile which averages better than 8 can apply to one selected school early in the summer (this is for early notification, not early entrance). April MCAT scores are required. The Early Decision program is a binding contract whereby you apply to only one medical school initially on this plan, receive early consideration, and if accepted agree to attend that school. The school will reach one of three decisions by October 1: 1) accepted, 2) rejected, or 3) deferred decision (deferred students will be considered a second time with the regular applicant pool). Students who are not accepted on Early Decision can then submit applications to other schools after the October 1 notification date.

For further information, see your Health Sciences Advisor in Goodwyn Hall, 207.

The MCAT 2015 is approximately 6 ½ hours long.

**Summary of MCAT Exam Sections**

**Biological and Biochemical Foundations of Living Systems**

59 items, 95 minutes

This section asks you to combine your knowledge of foundational concepts in the biological and biochemical sciences with your scientific inquiry, reasoning, and research and statistics skills to solve problems that demonstrate readiness for medical school.
Understanding the processes unique to living organisms, such as growing and reproducing, maintaining a constant internal environment, acquiring materials and energy, sensing and responding to environmental changes, and adapting, is important to the study of medicine. You will be tested on your knowledge of how cells and organ systems within an organism act both independently and in concert to accomplish these processes, as well as your ability to reason about these processes at various levels of biological organization within a living system.

**Chemical and Physical Foundations of Biological Systems**

59 items, 95 minutes

This section asks you to combine your knowledge of foundational concepts in the chemical and physical sciences with your scientific inquiry, reasoning, and research and statistics skills to solve problems that demonstrate readiness for medical school.

Understanding the mechanical, physical, and biochemical functions of tissues, organs, and organ systems is important to the study of medicine. You will be tested on your knowledge of the basic chemical and physical principles that underlie the mechanisms operating in the human body, and your ability to apply an understanding of these general principles to living systems.

**Psychological, Social, and Biological Foundations of Behavior**

59 items, 95 minutes

This section tests your knowledge and use of the concepts in psychology, sociology, biology, research methods, and statistics that provide a solid foundation for learning in medical school about the behavioral and socio-cultural determinants of health and health outcomes.

Understanding the behavioral and socio-cultural determinants of health is important to the study of medicine. You will be tested on your knowledge of the ways in which psychological, social, and biological factors influence perceptions and reactions to the world; behavior, and behavior change; what people think about themselves and others; the cultural and social differences that influence well-being; and the relationships between social stratification, access to resources, and well-being.

**Critical Analysis and Reasoning Skills**

53 items, 90 minutes

This section asks you to critically analyze information from a wide range of social sciences and humanities disciplines. Specific knowledge of these disciplines is not
required for this section; all of the information you will need appears in the passages provided. Among the areas from which content is drawn are ethics and philosophy, cultural studies, and population health.

For additional information regarding the MCAT 2015, please visit:

https://www.aamc.org/students/applying/mcat/mcat2015/testsections/

TEST PREPARATION RESOURCES

There are countless resources available to assist you in preparing for admissions testing, but the best resource is your academic program. The internet has a host of free and pay sites of varying quality that are designed to help you prepare for and practice taking the MCAT/PCAT/DAT/OAT/GRE. Beware of sites that charge exorbitant fees or those that promise a certain score, as no system can guarantee this. Kaplan, Baron’s, ExamKrackers, and The Princeton Review are some of the more reputable test prep companies, and each hosts book based, online, and classroom based courses. There are also several subject specific review books online and in bookstores. AUM conducts free practice MCAT sessions each semester open to all pre-health students.

PREMEDICAL LITERATURE

MEDICAL REFERENCE

The following publications provide very important information on pre-medical education and planning for medical school:

- Medical School Admission Requirements. Published annually by the Association of American Medical Colleges (AAMC), 2450 N Street, NW, Washington, DC. www.aamc.org $25.00
- Minority Student Opportunities in United States Medical Schools. (see above address). $15.00. Published by AAMC

PHYSICIANS

• The 50 Most Positive Doctors in America, Mike Magee, ed. 1996. Spencer Books Ltd, Canada. $49.95.
• Healing the Wounds: A Physician Looks at His Work, David Hilfiker. Creighton University Press. $16.95.
• Empathy and the Practice of Medicine, Beyond the Pill and Scalpel, Howard Spiro et al. (eds). 1996. Yale University Press. $18.00.
• In the Country of Hearts: Journeys in the Art of Medicine, John Stone. 1996. Louisiana State University Press. $17.95.
• Life After Medical School, Leonard Laster. 1996. W.W. Norton Co. $29.95.
• Medical Choices, Medical Chances. How Patients, Families, and Physicians
• Time to Heal: American Medical Education from the Turn of the Century to the Era of Managed Care, Kenneth Ludmerer. 1999. Oxford University Press. $32.50

PATIENTS

• It’s Always Something, Gilda Radner. 2000. Avon. $18.95.
• The Spirit Catches You and You Fall Down, Anne Fadiman. 1998. Farrar, Straus and Giroux. $15.00.

HOSPITALS

AGING


HISTORY OF MEDICINE


ETHICS AND LAW

• The Nature of Suffering and the Goals of Medicine, Eric J. Cassell. 1994. Oxford University Press. $20.00.
• Final Choices: To Live or To Die in an Age of Medical Technology, George M. Burnell. 1993. Perseus Publishing. $3.99.
• Due Consideration: Controversy in the Age of Medical Miracles, Arthur Caplan. 1998. Wiley and Sons, Inc. $19.90.
• Unequal Treatment, What You Don’t Know About How Women Are Treated by the Medical Community, Eileen Nechas and Denise Foley. 1994. Simon and Schuster.
• Am I My Brother’s Keeper? The Ethical Frontiers of Biomedicine, Arthur Caplan et al. 1998. Indiana University Press. $29.95.

JOB SEARCH/WORKING SMART


DEATH & DYING

• Final Choices: To Live or to Die in an Age of Medical Technology, George M. Burnell. 1993. Perseus Publishing. $3.99.
SURVIVING SCHOOL


FINANCING MEDICAL SCHOOL

- Peterson’s Financing Graduate School: How to Get the Money for Your Masters or Ph.D., Patricia McWade. 1996. Peterson’s Guides. $6.00.
- National Medical Fellowships, www.nmf-online.org, 5 Hanover Square, 15th Floor, New York, NY 10004.
- The National Association of Medical Minority Educators (NAMME), www.namme-hpe.org