





























# Department of Biomedical Sciences

## Cell and Molecular Biology Major - Comprehensive Major

sample schedule

### FIRST YEAR (Fall Semester)

ENG 110	.3
BMS 110	.4
CHM 160	.4
IDS 110	.1
MTH(as needed for physics eligibility)	.3-4
GENERAL EDUCATION	.3
<b>TOTAL HOURS</b>	<b>.18-19</b>

### FIRST YEAR (Spring Semester)

ENG 321	.3
BMS 231	.4
CHM 170(3) or CHM 175(2)	.5
MTH (as needed for physics eligibility)	.3-5
GENERAL EDUCATION	.3
<b>TOTAL HOURS</b>	<b>.18-19</b>

### SECOND YEAR (Fall Semester)

BMS ELECTIVE	.3-4
CHM 310	.5
MTH 261(5) or 287(3)	.3-5
GENERAL EDUCATION	.3
<b>TOTAL HOURS</b>	<b>.14-17</b>

### SECOND YEAR (Spring Semester)

BMS 321	.2
CHM 311	.5
CSC 101	.3
PED 100	.2
GENERAL EDUCATION	.3
<b>TOTAL HOURS</b>	<b>.15</b>

### THIRD YEAR (Fall Semester)

BMS 521	.5
PHY 123(4) or PHY 203(5)	.4-5
GENERAL EDUCATION	.9
<b>TOTAL HOURS</b>	<b>.18-19</b>

### THIRD YEAR (Spring Semester)

BMS 494	.1
BMS 525	.4
PHY 124(4) or PHY 204(5)	.4-5
GENERAL EDUCATION	.8
<b>TOTAL HOURS</b>	<b>.17-18</b>

### FOURTH YEAR (Fall Semester)

BMS ELECTIVES	.4
GENERAL EDUCATION	.12-14
<b>TOTAL HOURS</b>	<b>.16-18</b>

### FOURTH YEAR (Spring Semester)

BMS ELECTIVES	.3
GENERAL EDUCATION	.12-14
<b>TOTAL HOURS</b>	<b>.15-17</b>

# Department of Biology

## Biology Major with Chemistry Minor

sample schedule

### FIRST YEAR (Fall Semester)

ENG 110	.3
MTH (as needed for MTH 138 eligibility)	.3-5
CHM 160	.4
BIO 121	.4
IDS 110	.1
<b>TOTAL HOURS</b>	<b>.15-17</b>

### FIRST YEAR (Spring Semester)

MTH 138(5), 261(5), or 287(3)	.3-5
CHM 170	.3
CHM 175	.2
BIO 122	.4
COM 115	.3
<b>TOTAL HOURS</b>	<b>.15-17</b>

### SECOND YEAR (Fall Semester)

MTH 261(5) or MTH 287(3)	.3-5
CHM 310	.5
BIO 235	.4
PLS 101	.3
CIS/CSC 101	.3
<b>TOTAL HOURS</b>	<b>.18-20</b>

### SECOND YEAR (Spring Semester)

CHM 311	.5
BIO 310(5) or BIO 320(4)	.4-5
PHY 123(4) or PHY 203(5)	.4-5
ENG 120	.3
PED 100	.2
<b>TOTAL HOURS</b>	<b>.18-20</b>

### THIRD YEAR (Fall Semester)

BIO 361	.4
PHY 124(4) or PHY 204(5)	.4-5
CHM 350	.3
CHM 451	.2
HST 121 or 122	.3
<b>TOTAL HOURS</b>	<b>.16-17</b>

### THIRD YEAR (Spring Semester)

BIO 310(5) or 320(4)	.4-5
BIO 380	.5
SOC 150 or PSY 121	.3
GENERAL EDUCATION	.3
<b>TOTAL HOURS</b>	<b>.15-16</b>

### FOURTH YEAR (Fall Semester)

BIO 369	.4
BIO 555	.3
SOC 150 or PSY 121	.3
GENERAL EDUCATION	.6-8
<b>TOTAL HOURS</b>	<b>.16-18</b>

### FOURTH YEAR (Spring Semester)

BIO 511 or 520	.3
GENERAL EDUCATION	to total 125 hrs or more
<b>TOTAL HOURS</b>	<b>to total at least 125 hrs</b>

# SMSU

## Preparation for Medical School

### Selection of the School

Early in the third year of your premedical program, you should begin serious consideration about where you want to go to medical school. As a rule, your best chance for a successful application will be the state supported medical schools in the state in which you have established legal residency. The major reason for this is that most state supported schools are restricted in the number of out-of-state students accepted. In many cases that restriction limits them to less than five percent of the entering class.

Because private medical schools are not restricted by residency requirements, they offer the second most viable chance for a successful application. Private medical schools, however, have a much larger number of applicants. Also, you should be aware that their tuition rates are considerably higher since they do not receive state funds.

There are several private, usually profit making, medical schools in the Caribbean Island nations and in Mexico that cater to U.S. residents. Most of these schools require large application fees and high tuition. Instruction is usually in large group lecture, and less laboratory and clinical experience is provided. If you are considering a “foreign”

medical school, you should discuss it with your advisor and perhaps the chairperson of the University's Premedical Committee.

An important reason for early selection of the medical school or schools to which you wish to apply is the necessity to designate these medical schools on the MCAT application so that the school will receive a copy of your MCAT scores. Also, you should become familiar with the admissions requirements of each school. The average applicant applies to nine medical schools. Thirteen percent apply to only one school, while eight percent apply to 20 or more schools.

### MD/PhD Programs

If you are looking for a career that combines traditional medical practice with basic biomedical research, you may wish to consider a combined MD/PhD degree. Over 100 medical schools offer such a program. Some programs provide assistance (tuition, stipends) for MD/PhD students through the Medical Scientist Training Program (MSTP) funded by the National Institute of General Medical Sciences. National predoctoral fellowships also are available through NIH, NSF, and the Howard Hughes Medical Institute.

### Preparation for the MCAT

Every undergraduate course you take should be considered preparation for the Medical College Admission Test (MCAT), but through preparation entails much more. The MCAT is offered in April and August every year. A student may take the examination at either time, but premedical advisors recommend that core science courses be completed first. Most students choose to take the exam in April of their junior year so that their application can be completed well before the medical school application deadline. This will allow the student to take the MCAT again before applications are due if desired. The registration deadline for each examination is approximately four weeks before the test date.

Occasionally, SMSU offers a review of course work that helps students begin their own personal review. Students should check with their advisor or officers of the Premedical Society for more information. For students interested in preparing for the MCAT, the designers of the test make available the MCAT Student Manual and sample tests for a fee. Cost of the preparation manual and tests fluctuates from year to year.



For more information, write to:

### **Memberships and Subscriptions**

**Association of American  
Medical Colleges**

**One Dupont Circle, NW, Suite 200  
Washington, DC 20036**

## **The MCAT**

In addition to studying for the MCAT and preparation through review of course work, a premedical student must familiarize himself or herself with the layout of the examination, the scoring procedure, and sample questions. Four main sections compose the MCAT: Verbal Reasoning, Biological Sciences, Physical Sciences, and Writing Samples. Below is a table with important MCAT information.

The Biological Science section includes questions on both biology and organic chemistry. Physics and inorganic chemistry complete the Physical Science section. Sample questions for each section of the test can be found in the manual listed below or in other preparation manuals available at the SMSU bookstore. Three sections have scores scaled on an interval of 1 through 15, and the national average remains near 8 for each section. The written section of the examination is graded on a letter basis ranging from J through T, and the letter N represents the 50th percentile score for this section.

## **Extracurricular Activities**

In addition to academic requirements, a premedical student must also fulfill non-academic medical school requirements. Examples include volunteer work, gaining leadership experience, involvement in a variety of extracurricular activities, and taking part in community events. Any of these experiences show characteristics medical schools look for including leadership, maturity, motivation, perseverance, initiative, and breadth of interest. Many activities would qualify as fulfilling these non-academic requirements, but one specific example is the Greene County Medical Society preceptorship program. Check with your advisor or the sponsor of the Premedical Society for details. This program gives the student an opportunity to evaluate his or her career choice. It is a winter intercession, physician/student preceptorship program. It provides the student an opportunity to spend a week or more working full time with a physician.

In summary, for the student to be placed in the most competitive position for acceptance into medical school, he or she should:

- **Strive to maintain high grades**
- **Maintain an above average academic load**
- **Be active in the Premedical Society**
- **Broaden academic training through research or hospital work**
- **Pursue an academic program with a broad base to help develop a variety of academic experiences**
- **Work carefully with a premedical faculty advisor**
- **Maintain and be active in non-academic activities**
- **Gain shadowing experience with physicians**

## **The MCAT**

<b>Section</b>	<b>Questions</b>	<b>Time</b>	<b>Score</b>
Verbal Reasoning	65	84 minutes	1-15
Physical Sciences	77	100 minutes	1-15
Essay Writing	2	60 minutes	J-T
Biological Sciences	77	100 minutes	1-15

## The Application Process

The application process begins the final step toward acceptance into medical school. Traditionally, students apply to medical schools during the fall of their senior year, so that they will be ready to matriculate the following fall. To avoid conflicts with class demands, students are encouraged to pick up application materials from the chairperson of the SMSU Premedical Committee before leaving campus in the spring, so they can work on these forms over the summer.

Most medical schools in the United States are affiliated with one of the two major application services: the American Medical Colleges Application Service (AMCAS) or the American Association of Colleges of Osteopathic Medicine Application Service (AACOMAS). Application to medical schools participating in AMCAS or AACOMAS is made through that service; application to schools not participating must be made directly to the schools.

Premedical advisors recommend that students complete the AMCAS or AACOMAS packets as early as possible to allow time for letters of evaluation/recommendation to be written and to make sure deadlines are met. AMCAS deadlines range from October 15 to December 15, while AACOMAS deadlines range from December 1 to February 1. Applications submitted near the deadline, however, put students at a decided disadvantage at some schools. The application materials can be picked up in University College Hall, Room 109, from the coordinator of the Health Professions Resource Room. You may also request electronic versions of application materials from AMCAS ([www.aamc.org](http://www.aamc.org)) or AACOMAS

([www.aacom.org](http://www.aacom.org)) through the Internet.

Both AMCAS and AACOMAS begin processing applications in June. The cost of the application depends on the number of schools to which you apply.

Besides these national application service fees, many medical schools charge a supplemental fee ranging from \$10 to \$100.

The student includes a personal statement as part of the application process. This provides subjective information that will assist admission committees evaluating the student as an individual. Give careful thought to the preparation of this statement, since it gives you the opportunity to discuss your motivation, objectives, professional interests, and background. It should, above all, be a statement of your relevant experiences, personal qualities, and attributes that will not only impress the admission committee but also provide insight into your goals and aspirations. It is advisable to mention one or two experiences that show your motivation and determination.

In addition, most medical schools require the University's Premedical Committee to prepare a composite letter of evaluation/recommendation. Students must meet minimal requirements for a Premedical Committee letter. If the student does not meet the requirements, he or she may ask individuals to write supporting letters directly to the medical school.

The SMSU packet for premedical students can be obtained from the Chairperson of the University's Premedical Committee. The packet includes:

- General instructions for Premedical Students
- Criteria for Determining Eligibility for a Committee Interview

- Instruction for Application to the Premedical Committee
- Request for Premedical Committee Interview form
- Student Personal History Profile form
- Two Request for Written Evaluation/Recommendation forms
- Waiver form

After the packet and interview are complete, the Premedical Committee will write a comprehensive letter to the medical school. It will describe the Committee's view of the student's positive characteristics and evaluation of the student's promise for successful completion of Medical School. The letter of evaluation/recommendation will include one of the following five recommendation levels:

- *Enthusiastically Recommended* - Clearly a student with superior capabilities
- *Highly Recommended* - A student with excellent capabilities; the Committee members have no reservations concerning the student's potential in medical school
- *Recommended* - A student having a strong academic record and one whom the committee feels would perform adequately in medical school
- *Recommended with Reservation* - A student who, for various reasons, leaves some question concerning his or her ability to successfully pursue a career in medicine at this point in time
- *Not Recommended* - A student who, for various reasons and in

the opinion of the Premedical Committee, would probably not perform well in medical school

You will be informed of the Committee's recommendation and will have the option to withdraw your application at this point which is prior to submission of the letter to the medical school. If you receive a "recommended with reservation" or a "not recommended" evaluation, you may wish to wait one year and reapply through the Committee or apply as an independent instead of having the Committee's evaluation sent to the medical schools.

## How Medical Schools Choose Their Students: A Summary of the Essential Issues

**Grades:** Demonstration that the student is able to do well in science courses is a must. Generally, students with a GPA less than 3.2 and a science GPA less than 3.2 are poor candidates. Each medical school will provide information about average GPA and MCAT scores of entering classes.

**MCAT:** Good scores (8 or above) are expected. It is also important that the MCAT scores reflect the student's GPA. While there are good reasons for discrepancies, a student with high grades and low MCAT scores (or vice versa) can expect to be asked to explain the discrepancy during an interview. A few schools (i. e., Johns Hopkins and University of Rochester) do not use the MCAT for admissions decisions.

**Activities:** Strong candidates for med-

ical school have spent time in community or university service. Physicians have a good sense of community responsibility, and activities that reflect this make the student a more competitive applicant.

Involvement in student organizations, student government, church, or charitable organizations strengthens an application to medical school. Any leadership role the student played in these organizations is also evaluated favorably. Research experience is also a positive factor (it is required of applicants for combined MD/PhD programs or programs that emphasize research in the medical curriculum). Employment can also be considered a positive, especially if it includes experience in the medical workplace.

### Letters of Evaluation/

**Recommendation:** Most medical schools ask for a letter of evaluation/recommendation from the Premedical Committee. This Committee prepares a composite document using several assessments/indications.

Evaluation/recommendation letters are an important part of the application, so the individuals who write them must know the applicant well. Additional letters from community organizations or from an employer are usually helpful. Letters from governmental officials or from family friends and relatives are generally not helpful. Students are advantaged by having letters reflecting substantive relationships with faculty members.

**Interview:** While it is understood that an interview does not always present even the exceptional student well, this exchange gives the medical school a chance to assess the interpersonal skills of the student and to ask about incon-

sistencies in the record. The interview is of more value to the student than the medical school since the student is allowed to discuss aspects of the scholastic or extracurricular activities record. Additionally, this exposure allows the student to evaluate the institution in preparation for the final selection decision. Types of interviews range from individual, to group, to panel or jury. Furthermore, candidates should be aware that "non-interview" schools (i. e., University of Illinois, University of Iowa, and Brown) interview only a small number of candidates about whom they need more information. They rely heavily on the personal statement and letters submitted on behalf of the candidate.

# SMSU

## Additional Information

### The Premedical Committee

The Premedical Committee of Southwest Missouri State University serves as the primary and often the only link between you, the applicant, and the medical school. The primary function of the Committee is to evaluate your undergraduate premedical preparation and to provide medical schools with a comprehensive evaluation of your preparation record. Medical schools are becoming increasingly dependent upon a committee evaluation rather than individual letters of recommendation.

Keep in mind that your grades, the quality of your coursework, and your MCAT scores are factors which are used by both the Premedical Committee and the medical school in making admission decisions. In addition, there are several non-academic factors that also are used in formulation of your evaluation/recommendation. The more familiar the members of the Premedical Committee are with you as a person, the more accurate the evaluation/recommendation.

The Premedical Committee was designed to assist you in obtaining admission to medical school. If after the evaluation of your application materials and your interview the committee has decided on an “enthusiastically recommended,” “highly recommended,” or

“recommended” evaluation, the Chairperson and the Committee will assemble the most positive letter possible to forward to the medical school. The Committee has established credibility with the regional medical schools. Therefore, the Committee gives enthusiastically recommended, highly recommended, and recommended evaluations only to those students who will almost definitely succeed in a medical school program.

Should the Committee’s decision be a recommend with reservations or not recommended, the student will be informed of the reasons for that level of recommendation. The committee will assist the student in identifying ways to improve his or her application at a later date.

It cannot be emphasized too strongly that the Premedical Committee does not function to “keep students out of” medical school. On the contrary, the Committee is dedicated to assisting students prepare an application that will result in acceptance to medical school. The function of the Committee is to evaluate premedical preparation and to formulate a composite letter of evaluation/recommendation to be forwarded to medical schools for their use during the evaluation process.

### The Premedical Society

Established in 1979, the Premedical Society consists of students and faculty with common interests in premedical preparation at Southwest Missouri State University. The Society holds regular monthly meetings during the academic year. In addition, it sponsors, with the Premedical Committee, an evening seminar each semester featuring a speaker from the medical profession and helps coordinate the Greene County Medical Society preceptorship program (see below). Also, an annual Premedical Banquet is held each spring semester for the purpose of presenting awards that recognize outstanding premedical students, and present students who have been admitted to medical school.

The primary purpose of the society is to provide premedical students the opportunity to communicate with members of the medical profession, the Premedical Committee, and other premedical students. In addition to guest speakers, group travel to medical schools, clinics, and hospitals is often arranged to enhance the experiences of the student.

Membership applications are available from the officers of the Premedical Society, the Chairman of the Premedical Committee and premedical advisors.



Students pay yearly dues to maintain membership in the society, and copies of the Constitution and Bylaws are available from the officers of the Premedical Society.

## Preceptorship Program

The Greene County Medical Society sponsors a preceptorship program during the break between fall and spring semesters. The program provides an opportunity for premedical students to work directly with an M.D. or D.O. on a daily basis. This program may be from five to ten days duration and includes hospital exposure. This is an excellent opportunity for premedical students to get firsthand experience in the medical field. This opportunity may help solidify the student's desire to continue pursuing a career in medicine, or it may influence the student to select a different challenging career.

Students interested in participating in this program should make that desire known to the sponsor of the Premedical Society by mid-November. The student also identifies an area of medicine in which he or she is most interested. The Greene County Medical Society will assign students to physicians and will notify the students of the assignment. Students may participate in the program more than once.



## Health Professions Resources

For many students, the health care industry, especially the practice of medicine, is very confusing. Even in the "Information Age," it is difficult to get straight answers to questions about career opportunities in health care. For information on the SMSU campus, the student should be aware of three differ-

ent resources other than the premedical advisor.

*The Career Center*

As the name implies, this center provides students with assistance in career planning, career preparation, and job search strategies. If interested in health care call 417-836-5636 to schedule an appointment with a counselor who specializes in opportunities in the health care industry. He or she can help the student find career descriptions, employment trends and salary ranges. Once students have narrowed career choices based on information received, they may speak with an academic advisor or the coordinator of the Health Professions Resource Room to identify the educational pathway to that career.

*The Internet*

Professional organizations and educational programs have put extensive, up-to-date information on the Internet. Students can try one of the many search engines using a career field of interest as the search subject. The Health Professions Resource Page, located within University College and accessible from the SMSU home page ([www.smsu.edu](http://www.smsu.edu)), has information specifically for SMSU students along with helpful links.

## University of Missouri – Bryant Scholars Program

To further enhance its rural health mission, the University of Missouri-Columbia (MU) School of Medicine has implemented a strategy to encourage young people coming from rural backgrounds to pursue a medical education. Because these students tend, for economic and geographic reasons, to preferentially attend regional state universities and other area colleges, the MU Rural Scholars Program has been established.

Two students from Southwest Missouri State University may be accepted into this program as a cooperative effort among faculty at SMSU, MU medical alumni residing in the immediate area, and MU School of Medicine faculty. Students accepted into the pre-admissions program are offered guaranteed acceptance into the MU School of Medicine conditional upon their achieving certain academic standards. Students are eligible for admission to the program following completion of their freshman year in college.

Acceptance into this program is based on high academic achievement, commitment to a career in rural medicine, possession of personal characteristics expected of quality physicians, and a small town\* or rural background.

Specifically, applicants must:

- show evidence of a composite score on the ACT examination of 30 or above
- show evidence of high academic achievement during high school
- show evidence of high academic achievement during the first year of college
- show evidence of leadership and interest in a variety of extracurricular activities

\* preference to be given to students who reside in communities of 18,000 people or less

\* If you meet the requirements for consideration, see the chairperson of the Premedical Committee for additional information

## Kirksville College of Osteopathic Medicine

Accelerated Admissions Program – This program provides special admission opportunities to outstanding freshmen premedical students at SMSU. The seven-year program entails three years of undergraduate work at SMSU followed by four years at KCOM. See the SMSU catalog and/or the chairperson of the Premedical Committee for additional information.

## Health Professional Programs at SMSU

Physician Assistant

Physical Therapy

Nursing

Dietetics

Athletic Training and Sports Medicine

Audiology

Speech-language pathology

Radiography

Respiratory Therapy

Nurse Anesthesia

Radiography

Respiratory Therapy

Geriatrics

Social Work

See a current catalog for contact information and a description of the program or visit the SMSU website at [www.smsu.edu](http://www.smsu.edu).



#### Preosteopathic Medicine Scholars

Program – this program provides preadmission opportunities for outstanding premedical students at SMSU. Students apply for admission after completing three semester (approximately 45 credit hours) at SMSU. The 45 credit hours must include CHM160, 170 and 175; BIO121, 122 or BMS110, 230, and Writing I. Students must have a composite ACT score of at least 28 and a GPA of at least 3.40. See the chairperson of the Premedical Committee for additional information.

#### Scholarships

Students pursuing a premedical program may compete for many scholarships. Most of these are available to all students. Scholarships may be university scholarships awarded for academic performance, departmental scholarships, or foundation scholarships. A list and description of the various scholarships and the eligibility criteria can be found in the *Financial Aid Handbook*.

Premedical students finishing their sophomore or junior year should be aware of one scholarship in particular, the Fulbright-Sawyers Scholarship. The deadline for applying for one of these scholarships is around the end of April. Application information can be obtained from the Financial Aid Office.

Be sure to check with your premedical advisor for other scholarships awarded by your department.



## Waivers

During the application process you will be asked to sign waivers of your rights in accordance with the provisions of the Family Educational Right and Privacy Act of 1975. This act, as amended, permits you access to certain information. By signing the waivers you deny your right of access to information specified in the waiver. It is the opinion of the Premedical committee that to provide you with a comprehensive and meaningful evaluation/recommendation, either to medical schools or in evaluations sent to the committee, the writers of these evaluations/recommendations must know that comments will be held in strict confidence. We strongly encourage you to waive your rights to view the committee letter to the medical school and comments written by your evaluators to assure the most meaningful evaluations. However, you are not required to waive your rights nor are you required to waive your rights, for committee consideration of your application.