Finding Your Path to Medical School

Cathy Eden, Pre-Med/Pre-Dent/Pre-Health Advisor

Good News, Bad News

- There are an infinite number of roads that you can take to get to medical school
- There is no checklist or road map that you can follow that will guarantee that you will get there
- You must create your own map
Table 18: MCAT and GPAs for Applicants and Matriculants to U.S. Medical Schools by Primary Undergraduate Major, 2013

<table>
<thead>
<tr>
<th>Applicants, 2013</th>
<th>MCAT VR Mean</th>
<th>MCAT PS Mean</th>
<th>MCAT BI Mean</th>
<th>Total MCAT Mean</th>
<th>GPA Science Mean</th>
<th>GPA Non-Science Mean</th>
<th>GPA Total Mean</th>
<th>Total Applicants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Sciences</td>
<td>9.8</td>
<td>2.2</td>
<td>5.9</td>
<td>3.3</td>
<td>28.2</td>
<td>5.5</td>
<td>M</td>
<td>Q</td>
</tr>
<tr>
<td>Engineering</td>
<td>9.5</td>
<td>1.5</td>
<td>5.6</td>
<td>2.1</td>
<td>33.0</td>
<td>5.9</td>
<td>0.9</td>
<td>25.3</td>
</tr>
<tr>
<td>Math and Statistics</td>
<td>9.6</td>
<td>2.1</td>
<td>5.9</td>
<td>2.2</td>
<td>33.3</td>
<td>5.1</td>
<td>0.1</td>
<td>21.0</td>
</tr>
<tr>
<td>Other</td>
<td>9.8</td>
<td>2.2</td>
<td>5.6</td>
<td>2.1</td>
<td>30.2</td>
<td>5.1</td>
<td>0.5</td>
<td>20.3</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>9.6</td>
<td>2.1</td>
<td>5.9</td>
<td>2.2</td>
<td>35.1</td>
<td>5.3</td>
<td>1.0</td>
<td>31.5</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>9.6</td>
<td>2.1</td>
<td>5.9</td>
<td>2.2</td>
<td>28.6</td>
<td>5.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Specialized Health Sciences</td>
<td>9.2</td>
<td>2.1</td>
<td>5.5</td>
<td>2.4</td>
<td>27.6</td>
<td>5.6</td>
<td>0.2</td>
<td>25.6</td>
</tr>
<tr>
<td>All Applicants</td>
<td>9.3</td>
<td>2.1</td>
<td>5.8</td>
<td>2.2</td>
<td>29.4</td>
<td>5.6</td>
<td>0.3</td>
<td>27.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Matriculants, 2013</th>
<th>MCAT VR Mean</th>
<th>MCAT PS Mean</th>
<th>MCAT BI Mean</th>
<th>Total MCAT Mean</th>
<th>GPA Science Mean</th>
<th>GPA Non-Science Mean</th>
<th>GPA Total Mean</th>
<th>Total Matriculants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Sciences</td>
<td>9.8</td>
<td>1.7</td>
<td>5.4</td>
<td>2.9</td>
<td>30.8</td>
<td>4.9</td>
<td>0.0</td>
<td>21.1</td>
</tr>
<tr>
<td>Engineering</td>
<td>10.5</td>
<td>1.6</td>
<td>5.5</td>
<td>2.9</td>
<td>33.1</td>
<td>4.4</td>
<td>0.5</td>
<td>33.0</td>
</tr>
<tr>
<td>Math and Statistics</td>
<td>10.0</td>
<td>1.8</td>
<td>5.6</td>
<td>2.8</td>
<td>31.9</td>
<td>4.1</td>
<td>0.1</td>
<td>31.8</td>
</tr>
<tr>
<td>Other</td>
<td>9.8</td>
<td>1.7</td>
<td>5.4</td>
<td>2.9</td>
<td>19.7</td>
<td>4.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>10.1</td>
<td>1.7</td>
<td>5.6</td>
<td>2.8</td>
<td>31.9</td>
<td>4.6</td>
<td>0.0</td>
<td>31.4</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>10.0</td>
<td>1.6</td>
<td>5.5</td>
<td>2.9</td>
<td>15.1</td>
<td>3.6</td>
<td>0.8</td>
<td>16.6</td>
</tr>
<tr>
<td>Specialized Health Sciences</td>
<td>10.0</td>
<td>1.6</td>
<td>5.5</td>
<td>2.9</td>
<td>20.2</td>
<td>4.6</td>
<td>0.0</td>
<td>20.3</td>
</tr>
<tr>
<td>All Matriculants</td>
<td>10.0</td>
<td>1.7</td>
<td>5.5</td>
<td>2.9</td>
<td>20.5</td>
<td>4.6</td>
<td>0.0</td>
<td>20.2</td>
</tr>
</tbody>
</table>

**Note:** The table excludes the “All Matriculants” entry.

Field of Healthcare is Vast (& Growing)

Name 5 job titles in healthcare, other than nurse or doctor, which require a BS/BA degree or higher.

There are over 200 different careers in healthcare... *(NOT including Public Health careers!)*
List of Healthcare Careers

Athletic Trainer  Athletic Trainer
Audiologist   Audiology
Acupuncturist  Acupuncturist
Anesthesiology Assistant  Anesthesiology Assistant
Biomedical Engineer  Biomedical Engineer
Bioinformatics  Bioinformatics
Biostatistician  Biostatistician
Certified Nursing Assistant  Certified Nursing Assistant
CT Technologist  CT Technologist
Cardiopulmonary Technician  Cardiopulmonary Technician
Clinical Lab Scientist  Clinical Lab Scientist
Cardiovascular Technologist  Cardiovascular Technologist
Cardiovascular Technician  Cardiovascular Technician
Chiropractor  Chiropractor
Cytotechnologist  Cytotechnologist
Community Health Worker  Community Health Worker
Clinical Trials Researcher  Clinical Trials Researcher
Dentist  Dentist
Dental Hygienist  Dental Hygienist
Dental Assistant  Dental Assistant
Dietician  Dietician
Dental Lab Technician  Dental Lab Technician
Dosimetrist  Dosimetrist
Emergency Medical Technician  Emergency Medical Technician
ECG Technician  ECG Technician
EEG Technician  EEG Technician
Exercise Physiologist  Exercise Physiologist
Environmental Health & Safety  Environmental Health & Safety
Ethnicity  Ethnicity
Epidemiologist  Epidemiologist
Genetic Counselor  Genetic Counselor
Health Specialty Teacher  Health Specialty Teacher
Hospital Administrator  Hospital Administrator
Health and Medical Services Manager  Health and Medical Services Manager
Histologist  Histologist
Kinesitherapist  Kinesitherapist
Licensed Practical Nurse  Licensed Practical Nurse
MRI Technologist  MRI Technologist
Medical Interpreter  Medical Interpreter
Medical Coder  Medical Coder
Medical Records Technician  Medical Records Technician
Medical Transcriptionist  Medical Transcriptionist
Medical Technologist  Medical Technologist
Mammographer  Mammographer
Medical Illustrator  Medical Illustrator
Medical Photographer  Medical Photographer
Medical Assistant  Medical Assistant
Medical Librarian/Curator  Medical Librarian/Curator
Medical Records Administrator  Medical Records Administrator
Nuclear Medicine Technologist  Nuclear Medicine Technologist
Nursing Instructor  Nursing Instructor
Nurse Anesthetist  Nurse Anesthetist
Nurse Practitioner  Nurse Practitioner
Nurse/Midwife  Nurse/Midwife
Nutritionist  Nutritionist
Ophthalmologist  Ophthalmologist
Occupational Therapist  Occupational Therapist
Occupational Therapy Assistant  Occupational Therapy Assistant
Orthotist  Orthotist
Optometrist  Optometrist
Optician  Optician
Paramedic  Paramedic
Patient Advocate  Patient Advocate
Patient Financial Services  Patient Financial Services
Pathology Assistant  Pathology Assistant
Pathologist  Pathologist
PET Technologist  PET Technologist
Podiatrist  Podiatrist
Pulmonary Therapist  Pulmonary Therapist
Physician (MD/DO)  Physician (MD/DO)
Physicians Assistant  Physicians Assistant
Pharmacist  Pharmacist
Pharmaceutical Scientist  Pharmaceutical Scientist
Pharmacy Technician  Pharmacy Technician
Phlebotomist  Phlebotomist
Prosthesist  Prosthesist
Prosthodontist  Prosthodontist
Radiologist  Radiologist
Radiation Therapist  Radiation Therapist
Regulatory Affairs Specialist  Regulatory Affairs Specialist
Recreational Therapist  Recreational Therapist
Registered Nurse  Registered Nurse
Radiologic Technician  Radiologic Technician
Respiratory Therapist  Respiratory Therapist
Risk Management  Risk Management
Speech and Language Pathologist  Speech and Language Pathologist
X-Ray Technician  X-Ray Technician
School Nurse  School Nurse
Social Worker  Social Worker
Surgical Technician  Surgical Technician
Transcriptionist  Transcriptionist
Toxicologist  Toxicologist
Utilization Manager  Utilization Manager
Ultrasound Technician  Ultrasound Technician

www.ExploreHealthCareers.org


Anesthesiologist assistants are highly skilled professionals who work under the direction of licensed anesthesiologists (specialist physicians) and exclusively within the Anesthesiologist Assistant environment as described by the American Society of Anesthesiologists (ASA) to design and implement anesthesia care plans.

Anesthesiologist assistants operate anesthesia equipment, monitor patients and provide quality anesthesia care. They accompany the patient before, during and after anesthesia to ensure quality and continuity of care. Anesthesiologist assistants are trained to assist in life-saving measures, such as CPAP, and life support. Anesthesiologist assistants are in high demand, because of the need for skilled personnel to deliver anesthesia. Anesthesiologist assistants operate as physician extenders, performing critical tasks that ensure the safety of the patient and promote optimal health outcomes.

Working Conditions

Anesthesiologist assistants work in hospitals and surgery centers under the direction of a licensed anesthesiologist and exclusively within the Anesthesiologist Assistant environment as described by the American Society of Anesthesiologists (ASA).

The profession maintains a typical work week with options for on-call, evening or weekend assignments. The anesthesiologist assistant's responsibilities include:

- Taking a complete health history of the patient
- Performing physical exams to identify any issues that may affect the anesthesia care plan

Salary

$110,000 - $120,000

5 Year MEAN

6 - 8

Job Outlook

Excellent

Related Articles

Accreditation Matters

Part III: Financing Your Health Science Education at a Non-Accredited School

Applying for Financial Aid

Part II

Why Diversity Matters in the Health Professions

Start preparing for your health career in high

---

Health Care Careers Enrichment Programs

254 enrichment programs found.

Keyword Search

Clear

Career

Clear

Acupuncture/Oriental Medicine Practitioner

Allied Dental Educator

Anesthesiologist Assistant

Animal Behavior

Art Therapist

Athletic Trainer

Audiologist (Doctor of Audiology)

Type

Clear

Academic enrichment

Basic science research

College of Natural Sciences

Jaan and Sanford I. Weill Cornell Graduate School of Medical Sciences

ACCESS Summer Research Program

LOCATOR: New York, NY

START: February 1, 2015

END: March 10, 2015

GENDER: Female only

TYPE: Undergraduate Research Program

Description:

Jaan And Sanford I. Weill Cornell Graduate School of Medical Sciences - ACCESS Summer Research Program

Adventures in Veterinary Medicine

LOCATOR: North Grafton, MA

TYPE: Academic enrichment, High School Students, Middle School Students, Clinical Observation

Adventures in Veterinary Medicine is a 9-week enrichment program for high school students with an interest in veterinary medicine.

Albert Schweitzer Fellows Program

LOCATOR: Boston, MA

Type: Academic enrichment, Basic science research

Albert Schweitzer Fellows Program

Participating in a Health Care Careers Enrichment Program is an excellent way to learn what it's like to work in that field. It gives you invaluable experience and personal contacts - plus it can increase your chances of being accepted into the health professions program of your dreams.

For additional enrichment programs in the field of health policy, see the National Institute of Health's list of Student Programs and the Kaiser Family Foundation's online directory of health policy fellowship opportunities. Also see the section on...
## Two Kinds of Medical Degrees

<table>
<thead>
<tr>
<th>Degree</th>
<th>Percentage of Doctors in US</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD, Doctor of Medicine</td>
<td>~70%</td>
<td>~70% of doctors in the US (2010, AAMC)</td>
</tr>
<tr>
<td>DO, Doctor of Osteopathic Medicine</td>
<td>~7%</td>
<td>~7% of doctors in the US (2010, AAMC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- only one DO school in New England (ME)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- not chiropractic</td>
</tr>
</tbody>
</table>

Both recognized as physicians by the American Medical Association (AMA). Both can choose any medical specialty.

---

## Miscellaneous Facts about Medical School

- Average age of most recently accepted class – 25
- UMass Medical – must be a MA resident (attend a MA HS and/or be a resident for 5 years)
- In-state preference for some medical schools
- Acceptance more challenging for international students
- Student Legal Services (922 Campus Center 545-1995)

<table>
<thead>
<tr>
<th>School</th>
<th>GPA (3.44/3.63 :: 3.66/3.76)</th>
<th>MCAT (28.4/31.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMass Medical</td>
<td>3.68sci/3.76non-sci</td>
<td></td>
</tr>
<tr>
<td>UMass Med</td>
<td>3.68sci/3.76non-sci</td>
<td></td>
</tr>
</tbody>
</table>
Create a Niche for Yourself

- Do Well in Your Classes
- Get Hands-On Healthcare Experience
- Choose a Major That You Love
- Be Informed about Admissions Requirements and the Admissions Process
- Find Meaningful Community Service

Creating a Niche for Yourself

Start with your interest and build from there. It doesn’t have to be fancy...

Nutrition?
Sports & fitness?
Public Health?
Research?
Find a volunteer opportunity that you love
UMass.edu → student life → get involved → community service

Teach a nutrition, cooking, or fitness workshop at a local after school program (or at the senior center or other community center)

Invent a solution to solve a problem (Alzheimer alert syst)

Design or get involved with a research project that interests you (protein folding, health surveys)

Find people with similar interests and brainstorm something you could do as a group
Choose a Major that You Love

Pre-Med is not a major (~15 classes)

Choose a major that you are passionate about

GPA in required pre-med courses still needs to be high

This year (2014), 29% of the incoming class at Albert Einstein College of Medicine (NYC) are non-science majors

Choose your GenEds WISELY and STRATEGICALLY to:

* explore and develop your interests
* distinguish yourself from other candidates
* help prepare for the new MCAT – more SBS
* become a better healthcare provider

Choose a minor that adds breadth to your academic preparation
Required and Recommended Courses

Two semesters (one year) (with labs) of:
General Chemistry (Chemistry 111, 112 or Chemistry 121H, 122H) No AP
Organic Chemistry (Chemistry 261, 262, lab 269 [Chemistry majors: 265, 266, 267, 268])
Physics (Physics 131, 132) 8 credits or (Physics 151, 152) 8 credits
AP Physics scores must be discussed with Pre-Med advisor
Introductory Biology (Biology 151, 152) 7 credits and lab (Biology 153) 2 credits No AP

Mathematics (Math 127, 131) calculus 3-4 credits and statistics (any statistics course above Stats 111) AP scores are acceptable
Biochemistry course above Biochemistry 100 is required for dental school, strongly recommended for medical school

Highly recommended General Education courses include:
Psychology 100: Introductory Psychology (Gen Ed: SB)
Sociology 110: Introductory Sociology (Gen Ed: SB/U)
Philosophy 164: Medical Ethics (Gen Ed: AT)
To help you be a better healthcare provider AND do well on the MCAT

Do Well in Your Classes

Your #1 priority
Be proactive
Use all available support services (LRC, SI, Office Hours)
Work with a study group
Meet with multiple advisors regularly (pre-med, departmental, honors)
Take care of yourself (exercise, eat well, get support)
### What if You Aren’t Doing Well...

- Talk with an advisor
- Re-consider your major
- Post Bacc programs
- Explore other career options
- Don’t abandon all hope

### Get Hands-On Healthcare Experience

More important than research or shadowing...

*hands-on, direct patient care experience is essential for acceptance to medical school.*
Get Hands-On Healthcare Experience

**Volunteer:**
Identify a facility (hospital, rehab center, long-term care) that is convenient for you to get to and contact the volunteer coordinator (3-6 months in advance may be necessary).

**Paid Work:**
Research different certifications offered through the Red Cross, local Community Colleges, local ambulance services (CNA, EMT, phlebotomy).

**Shadowing:**
Although shadowing isn’t considered hands-on experience, a small amount of shadowing can be helpful.
Get Hands-On Healthcare Experience

Get a copy of your immunizations or have a serum titer test (not having proof of immunity can delay your availability to start a job or volunteer commitment)

Make sure you have a recent TB test (some facilities want a 2-step - within 1 yr & 3 mos of starting)

Keep a journal of what you did, hours you worked, interesting things that happened, people who trained and supervised your work (include their contact info)

This will help you when you are ready to ask for LORs

It will also help you when you write your personal statement and interview
Read Books About the Field of Medicine

They will give you a glimpse into the field of medicine and help you on the Verbal section of the MCAT.

Recommended authors and books for pre-healthcare professionals:

**Atul Gawande** (Checklist Manifesto, Complications, articles in the New Yorker)

**Jerome Groopman** (Your Medical Mind, How Doctors Think, articles in the New Yorker)

**Tracy Kidder** (Mountains Beyond Mountains)

**Siddhartha Mukherjee** (The Emperor of All Maladies)

**Rebecca Skloot** (The Immortal Life of Henrietta Lacks)

Get to Know Faculty, Staff, (and Future Colleagues)

Find out what your professors’ research is about and be prepared to ask them about it

Attend college and departmental social events

Attend outside lectures

(Read college and department webpages to learn about important news and events)

Go to your professor’s office hours

Think of your classmates as colleagues and important contacts for the future
## Find Meaningful Community Service

Not all of your volunteer experiences need to be healthcare-related

Maintain long-term volunteer commitments

Seek opportunities that allow you to gain experience with people throughout the life span

---

Check the UMass website for links to volunteer opportunities
UMass.edu -> student life -> get involved -> community service

Consult with the United Way or Red Cross in your hometown to find volunteer opportunities close to home

Explore the Citizen Scholars program at UMass
### Find Meaningful Community Service

Keep a journal of what you did, hours you worked, interesting things that happened, people who trained and supervised your work (include their contact info)

This will help you when you are ready to ask for LORs

It will also help you when you write your personal statement and interview

### Be Informed About Medical School Admissions

Use only reputable, not-for-profit information sources (\textit{.edu and .org sites are the best})

There are many for-profit offerings (blogs, podcasts, etc) that offer dubious advice

You may hear conflicting information (sometimes even from reputable sources)
Be Informed About Medical School Admissions

*Association of American Medical Colleges*
www.aamc.org

*UMass College of Natural Sciences Health Professions Advising*
www.cns.umass.edu/students/pre-medical-and-pre-dental-advising

*Websites of medical schools of interest to you*

MCATquestionoftheday.com

---

Sign up for the CNS Pre-Med, Pre-Dent Email List

College of Natural Sciences
Other Websites with Helpful Information

**Association of American Medical Colleges-AAMC**
http://www.aamc.org

**UMass Medical School Selection Criteria:**
http://www.umassmed.edu/som/admissions/application-process/selection-criteria/

**UMass Medical School Academic Requirements:**
http://www.umassmed.edu/som/admissions/application-process/academic-requirements/

**Medical School Favorability to Out-of-State Residents:**
https://www.amherst.edu/campuslife/careers/students/gradstudy/health/guide/part2/appendix

**International Students and Medical School:**
https://www.aamc.org/students/aspiring/303912/applyasaninternationalapplicant.html
Questions

See a Pre-Med Advisor at least once each year.

To schedule an appointment, go to...
http://www.cns.umass.edu/students/academic-advising/make-an-appointment

From the pull-down menu...
Choose Pre-Med/Pre-Dent/Pre-Health

Choose an advisor...
Doug Smith, Assistant Dean
Cathy Eden, Pre-Med, Pre-Dent, Pre-Health Advisor

Questions for Pre-Meds to Think About...

What do you know about the medical profession?

How committed are you to the goal of medical school?

What is your experience in working with people from different backgrounds?

How do you feel about communicating difficult or bad news?

How do you deal with ambiguity?

What is your comfort level with making life or death decisions?

What are the most stressful conditions you have worked under?