



# **Pre-Medical and Pre-Dental Guide for Rice Students**

2016-2017



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## Welcome Letter from the Office of Academic Advising

Dear Rice Pre-Health Students,

This Pre-Medical and Pre-Dental Guide for Rice Students is intended to provide an overview of the application process to medical and dental schools in the United States – the timeline, coursework, and other components that comprise a competitive application. We believe this will serve as a useful resource in creating your academic plan at Rice and beyond.

All advisors in the Office of Academic Advising (OAA) are official health professions advisors registered with the Association of American Medical Colleges. We maintain membership in several professional organizations to keep up to date on the latest trends and data related to admission. While there are several individuals (and websites) you may wish to consult regarding your potential path towards professional school, we highly recommend that you contact one of our advisors for tailored advice regarding your personal plan.

Additionally, while most students are familiar with medicine, dentistry, and veterinary medicine, there are many other career paths that lead to employment in health care settings. For example, studies in allied health sciences include pharmacy, public health, optometry, podiatry, physical therapy, occupational therapy, and speech therapy, to name only a few. The OAA provides health professions advising for students interested in any of these fields and provides information through a variety of resources.

As you embark on your undergraduate career, we recommend that you use this time to explore your options, discover who you are, develop strong critical thinking and study skills, engage in experiences that allow you to integrate your learning with practical application, and begin to make meaningful contributions to your community.

Should you decide that the health professions route is one you intend to pursue, it is our hope that this guide will address most of your concerns. As you delve deeper into the process, our advisors are available to answer any specific questions, so feel free to schedule an appointment for further assistance.

We look forward to working with you!

*The Office of Academic Advising*

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<http://oaa.rice.edu> | <http://www.facebook.com/riceacademicadvising> | <http://www.twitter.com/riceacademics>

## Pre-Health Timeline

If you are considering a career in health care, you will need to complete all the required prerequisite courses and gain valuable clinical experiences before applying to a professional school. This timeline, which is designed for students who intend to matriculate immediately after graduating from Rice, serves as a point of reference to help you prepare your application and plan ahead to meet deadlines. Students planning a gap year(s) may wish to extend the timeline in consultation with an advisor.

<b>First Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>Attend the Health Professions Advising Orientation</li> <li>Plan a tentative course of study by engaging with the entire Rice community of advising</li> <li>Begin to survey career options in health care</li> <li>Join Rice Pre-Medical Society (RPMS), Rice Pre-Dental Society (RPDS), or another pre-professional student organization</li> </ul>	<ul style="list-style-type: none"> <li>Think about a major</li> <li>If desired, make arrangements to conduct research</li> <li>Visit the Center for Civic Leadership (CCL) to identify volunteer programs of interest</li> <li>Visit the Center for Career Development (CCD) to identify summer programs/job opportunities; apply for an OwlEdge Externship; attend the Rice Career and Internship Expo</li> <li>Visit the Study Abroad Office to plan ahead for opportunities during your junior or senior year</li> </ul>
<b>Second Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>Attend the Sophomore Information Session</li> <li>Plan the intellectual focus of your curriculum; narrow choices for a major</li> <li>Begin to obtain clinical observation experience</li> <li>Continue volunteer work</li> <li>Continue research, if applicable</li> </ul>	<ul style="list-style-type: none"> <li>Declare a major</li> <li>Apply for summer programs</li> <li>Check professional school admission requirements</li> <li>Begin preparation for the standardized test: independent review, Kaplan, The Princeton Review, Examcrackers, etc.</li> </ul>
<b>Third Year</b>	
Fall Semester	Spring Semester/Summer**
<ul style="list-style-type: none"> <li>Consider potential gap year opportunities, including fellowships, work, research, clinical exposure, volunteer programs, continued education, etc.</li> <li>Attend one of the Open File Information Sessions</li> <li>Open a file with the OAA before Winter Recess begins</li> <li>Begin preparing high school paragraph, curriculum vitae, informational interview form, and draft personal statement</li> <li>Request letters of evaluation before January 31 to be received in the OAA by May 15</li> </ul>	<ul style="list-style-type: none"> <li>High school paragraph, curriculum vitae, informational interview form, and draft personal statement due to the OAA before January 31</li> <li>Make appointment for an informational interview to be held before April 1</li> <li>Review professional school admission requirements again; research institutions of interest and generate list of schools for application</li> <li>Begin web-based common applications to professional schools (AMCAS, TMDSAS, AACOMAS, AADSAS, VMCAS, PharmCAS, SOPHAS, PTCAS, etc.)</li> </ul> <p>**Summer - Complete and submit both primary and secondary applications in a timely manner</p>
<b>Fourth Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>Continue progress toward completion of major and degree requirements</li> <li>Complete remaining prerequisite coursework</li> <li>Research professional schools before participating in interviews</li> </ul>	<ul style="list-style-type: none"> <li>Complete remaining degree requirements</li> <li>Update the OAA with your admission status</li> <li>Graduate!</li> </ul>

## Course and Standardized Test Requirements for Admission

### Prerequisite Course Requirements

It is important to recognize that there is an on-going, national conversation concerning the ‘synergy and efficiency in the continuum of pre-medical and medical education.’ Thus, undergraduate requirements for these programs are under review. Nevertheless, with few variations, the overwhelming majority of medical and dental schools require completion of the following courses.<sup>1</sup> Students will need to create an academic plan to accommodate these courses alongside their requirements for graduation.

Course	Required	Recommended	Hours	Required Lab Course	Hours
English	•		6		
General Chemistry	•		6	•	2
Organic Chemistry	•		6	•	2
Biology <sup>2,3</sup>	•		6	•	2
Biochemistry <sup>4</sup>	•	•	3		
Physics	•		6	•	2
Mathematics	•		3-4		
Statistics <sup>4</sup>	•	•	3		
Humanities/Social Sciences (hours= <i>n</i> )		•	12< <i>n</i>		

<sup>1</sup> For specific requirements to other programs (veterinary medicine, pharmacy, optometry, etc.), please contact the OAA.

<sup>2</sup> Most Texas medical schools require additional upper-level biology coursework (300- & 400-level course offerings).

<sup>3</sup> Dental schools require additional coursework in microbiology. BIOC 424 will satisfy this requirement.

<sup>4</sup> A significant number of medical schools have added at least three hours of this discipline as a requirement. Others strongly recommend.

The specific requirements for each medical school can be found in the yearly publication from the Association of American Medical Colleges, *Medical School Admission Requirements (MSAR)*, which can be purchased from the AAMC website: [www.aamc.org](http://www.aamc.org). Likewise, the American Dental Education Association publishes the *Official Guide to Dental Schools*, which can be purchased from the ADEA website: [www.adea.org](http://www.adea.org).

## Rice Courses that Satisfy Most Medical and Dental School Admission Requirements

PRESCRIBED COURSES	LECTURE ONLY	LAB ONLY	LECTURE/LAB COMBINED
<b>BIOLOGY</b>	<b>BIOC 201</b> <b>EBIO 202</b>	<b>BIOC 111, 211</b> <b>EBIO 213</b>	
<b>GENERAL CHEMISTRY</b>	<b>CHEM 121, 122, 151, 152, 360</b>	<b>CHEM 123, 124, 153, 154, 366</b>	
<b>ORGANIC CHEMISTRY</b>	<b>CHEM 211, 212, 320</b>	<b>CHEM 215, 365</b>	
<b>BIOCHEMISTRY</b>	<b>BIOC 301</b> <b>BIOE 330*</b>		
<b>PHYSICS</b>			<b>PHYS 101, 102, 111, 112, 125, 126</b>
<b>CALCULUS</b>	<b>MATH 101, 102, 111, 112, 211, 212, 221, 222</b>		
<b>STATISTICS</b>	<b>BIOE 391, 439, 440</b> <b>EBIO 338</b> <b>STAT 280, 305, 310</b>		
<b>ENGLISH</b>	<b>HUMA 101, 102</b> <b>FWIS 101-199</b> Any <b>English</b> course with ENGL prefix		

\*Indicates that specific institutional requirements should be checked because some schools require that biochemistry be taught in a biology or chemistry department.

## Rice Courses that Satisfy Texas Public Medical and Dental School Admission Requirements

The following Rice University courses have been approved by the Texas Medical and Dental School Application Service to fulfill prerequisite requirements for public medical and dental schools in Texas. Please note that the list below may include some classes that are not currently offered (last updated February 17, 2016).

PRESCRIBED COURSES	LECTURE ONLY	LAB ONLY	LECTURE/LAB COMBINED
<b>BIOLOGY</b>	<b>BIOC</b> 201, 300, 331 <sup>‡</sup> , 332, 334 <sup>‡</sup> , 335, 341, 344, 361 <sup>↓</sup> , 371, 372, 380 <sup>♀</sup> , 385 <sup>♀</sup> , 424, 443, 445, 447, 450, 460, 463, 464 <sup>↓</sup> , 481, 482, 523 <b>BIOE</b> 302, 307, 321, 322, 370, 372, 381, 403, 408, 420, 422, 524 <b>CHBE</b> 310 <b>EBIO</b> <sup>†</sup> 202, 321, 323, 328, 329 <b>KINE</b> 300, 301, 302, 321	<b>BIOC</b> 111, 112, 211, 310, 311, 313, 318, 320, 413, 415 <b>BIOE</b> 320, 342 <b>EBIO</b> <sup>†</sup> 213, 316, 332 <b>KINE</b> 323, 351 <b>NEUR</b> 331 <b>NSCI</b> 120	
<b>GENERAL CHEMISTRY</b>	<b>BIOC</b> 352 <b>CHEM</b> 121, 122, 151, 152, 360	<b>CHEM</b> 123, 124, 153, 154, 366	
<b>ORGANIC CHEMISTRY</b>	<b>CHEM</b> 211, 212, 320	<b>CHEM</b> 215, 365	
<b>BIOCHEMISTRY</b>	<b>BIOC</b> 301, 302 <b>BIOE</b> 330*		
<b>PHYSICS</b>			<b>PHYS</b> 101, 102, 111, 112, 125, 126
<b>CALCULUS</b>	<b>MATH</b> 101, 102, 111, 112, 211, 212, 221, 222		
<b>STATISTICS</b>	<b>BIOE</b> 391, 439, 440 <b>EBIO</b> 338 <b>KINE</b> 319 <b>PSYC</b> 339 <b>SOCI</b> 382 <b>STAT</b> 280, 305, 310, 312, 453		
<b>ENGLISH</b>	<b>HUMA</b> 101, 102 <b>FWIS</b> 101-199 Any <b>English</b> course with ENGL prefix		

<sup>‡</sup> Indicates a course that is cross-listed in the Department of Ecology and Evolutionary Biology with the same description and course number.

<sup>↓</sup> Indicates a course that is cross-listed in the Department of Bioengineering with the same description and course number.

<sup>♀</sup> Indicates a course that is cross-listed in the Neuroscience Program with the same description and course number.

<sup>†</sup> Indicates that these courses (all courses with an EBIO prefix) were formerly approved and added to the prescribed courses list as BIOS courses.

\*Indicates that specific institutional requirements should be checked because some schools require that biochemistry be taught in a biology or chemistry department.

## Advanced Placement (AP) Acceptance

Although Advanced Placement credit may be used to satisfy some requirements for many medical and dental schools, not all schools will accept AP credit. The OAA website, under the section titled Specialized Advising, on the Pre-Health Professions page, features a convenient summary document titled “AP Credit Chart – Allopathic Medicine”. Still, students should check websites or contact admission committees to determine each school’s current AP policies and decide whether to use their credit or complete the coursework at Rice.

Students need to consider whether they have truly learned the information presented in an AP course sufficient to perform well in upper-level coursework and on professional school admission tests. Rather than use their AP credit, students may choose to complete the coursework at Rice in order to reinforce and confirm mastery of the material, establish their capability of performing well at the college level in each discipline, and satisfy the requirement at those schools that do not accept AP credit.

If a student is confident in their mastery and retention of the material and chooses to rely on a large number of AP credits to satisfy prerequisite course requirements, it leaves little for an admission committee to assess. Therefore, if a student satisfies the general biology and/or general chemistry requirements with AP credits, they should complete at least two additional semesters of upper-level course work in that discipline. In any case, there is no AP credit granted for general biology laboratory. Students must complete at least two credit hours of biology lab during their undergraduate tenure.

## Medical College Admission Test (MCAT) and Dental Admission Test (DAT)

In addition to the prerequisite courses described above, medical and dental schools require the Medical College Admission Test (MCAT) and the Dental Admission Test (DAT) respectively. The MCAT exam is a standardized, multiple-choice examination designed to assess your problem solving, critical thinking, and knowledge of natural, behavioral, and social sciences. It consists of four sections which draw from biology, biochemistry, general chemistry, organic chemistry, physics, psychology, and sociology. Scores on the MCAT are reported as four scaled scores, each ranging from 118 (low) to 132 (high). The total score is the sum of the four individual section scores and ranges from 472 to 528.

The DAT is designed to measure your knowledge of scientific information, reading comprehension, quantitative reasoning, and perceptual ability. It is comprised of four sections which draw from biology, general chemistry, organic chemistry, and mathematics. DAT results are reported in terms of scale scores, ranging from 1 (low) to 30 (high).

It is recommended that students take the appropriate standardized test soon after completing the prerequisite course requirements. The MCAT and DAT are exams you must spend a significant amount of time preparing for, either in self-study or via a preparation course. Ideally, students score their greatest possible score the first time they take the test. Therefore, students should prepare thoroughly. However, it is not uncommon or detrimental to take the test a second time. Taking the test a second time allows for targeted preparation based on identified weaknesses and increases the likelihood of improving a score. Clearly, performing worse the second time around is not looked upon favorably. Consequently, preparation is absolutely critical if taking the test a second time.

If a student wishes to attend medical or dental school immediately after graduating from Rice, the final opportunity to take the test is August following the junior year. Though still in time to be considered by most schools, students may be at a disadvantage because with rolling admission many applicants have



already been invited for interviews. Earlier test dates (January – June) are advised instead. Scores are valid for three years in most instances.

For more information and to register for the MCAT, visit: [www.aamc.org/students/applying/mcat](http://www.aamc.org/students/applying/mcat).

For more information and to register for the DAT, visit: [www.ada.org/en/education-careers/dental-admission-test](http://www.ada.org/en/education-careers/dental-admission-test).

## Grades and Standardized Test Scores

For admission to medical or dental school, students must have strong grades and test scores. A student’s science grade point average is of particular importance and includes coursework in biology, chemistry, physics, and mathematics. However, strong grades are simply a statement of scholastic achievement. There is no clear boundary. As a general rule, students should strive for both a cumulative grade point average and a science grade point average above 3.50. The average MCAT of Rice students has been consistently above the national mean. Also, remember that the greater the competition to a particular school, the higher your grades and test score must be for you to be a competitive applicant.

Yet, acceptance to medical and dental school is not based on numbers alone. It is based on a holistic evaluation that includes grades, standardized test scores, state of residency, motivation, relevant health care experiences, co-curricular involvement, recommendations, and the impression of the candidate by an admission committee during an interview. Do not be discouraged from pursuing medicine if your first year of science grades does not meet your expectations. Admission committees value an upward trend in your record of academic performance. If you have received a C or lower grade in a science course, it is a good idea to make an appointment with an academic advisor to discuss your course load, your co-curricular activities, and study strategies as you continue your studies. For more information and resources, visit the Academic Support section of the OAA website.

Likewise, the MCAT score scale emphasizes the center of the score range rather than the top third because students with scores at the center of the scale have historically performed well in medical school. The scale is intentionally designed to draw attention to applicants who might otherwise be overlooked and supports the holistic review of medical school applicants.

Mean Cumulative Grade Point Average and MCAT Score Rice Medical School Applicants (2010-2014)			
Calendar Year	Mean Grade Point Average	Rice Mean MCAT Score*	National Mean MCAT Score*
2010	3.710	33 (91 <sup>st</sup> percentile)	28 (67 <sup>th</sup> percentile)
2011	3.706	33 (91 <sup>st</sup> percentile)	28 (67 <sup>th</sup> percentile)
2012	3.712	33 (91 <sup>st</sup> percentile)	28 (67 <sup>th</sup> percentile)
2013	3.650	31 (83 <sup>rd</sup> percentile)	27 (61 <sup>st</sup> percentile)
2014	3.707	33 (91 <sup>st</sup> percentile)	28 (67 <sup>th</sup> percentile)

\*The AAMC began administering a revised version of the MCAT with a different score scale in April 2015. Averages for calendar year 2016 using the current scale will be available in summer 2017.

## Sample Course Schedules

Below are some examples of how a Rice student might plan to complete the course requirements for medical and dental schools. These sample schedules are a few of many possible schedules and do not attempt to display major or degree requirements. If necessary, talk with an advisor and adjust these examples to fit your own particular academic plan. Also, take into consideration that specific schools may have additional requirements, which can be found on each school's website.

### Engineering Students without Advanced Placement (AP) Credit

<b>First Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>• CHEM 121</li> <li>• CHEM 123</li> <li>• FWIS/ENGL</li> <li>• MATH 101</li> <li>• PHYS 101</li> <li>• PSYC/SOCI</li> </ul>	<ul style="list-style-type: none"> <li>• CHEM 122</li> <li>• CHEM 124</li> <li>• FWIS/ENGL</li> <li>• PHYS 102</li> <li>• PSYC/SOCI</li> </ul>
<b>Second Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>• BIOC 111</li> <li>• BIOC 201</li> <li>• CHEM 211</li> <li>• CHEM 215</li> </ul>	<ul style="list-style-type: none"> <li>• BIOC 211</li> <li>• CHEM 212</li> </ul>
<b>Third Year</b>	
Fall Semester	Spring Semester/Summer
<ul style="list-style-type: none"> <li>• BIOC 301 (or BIOE 330 in Spring)</li> </ul>	Spring – Take standardized test between January and June.  Summer – Complete and submit both primary and secondary applications in a timely manner.
<b>Fourth Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>• Continue progress toward completion of major and degree requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete remaining degree requirements.</li> </ul>

\*Add three biology electives and statistics where they fit best in any semester.

## Natural Sciences Students without Advanced Placement (AP) Credit

<b>First Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>• BIOC 111</li> <li>• BIOC 201</li> <li>• CHEM 121</li> <li>• CHEM 123</li> <li>• FWIS/ENGL</li> <li>• MATH 101</li> </ul>	<ul style="list-style-type: none"> <li>• BIOC 211/EBIO 213</li> <li>• CHEM 122</li> <li>• CHEM 124</li> <li>• EBIO 202</li> <li>• FWIS/ENGL</li> </ul>
<b>Second Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>• CHEM 211</li> <li>• PHYS 125</li> <li>• PSYC/SOCI</li> </ul>	<ul style="list-style-type: none"> <li>• CHEM 212</li> <li>• CHEM 215</li> <li>• PHYS 126</li> <li>• PSYC/SOCI</li> </ul>
<b>Third Year</b>	
Fall Semester	Spring Semester/Summer
<ul style="list-style-type: none"> <li>• BIOC 301</li> </ul>	<p>Spring – Take standardized test between January and June.</p> <p>Summer – Complete and submit both primary and secondary applications in a timely manner.</p>
<b>Fourth Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>• Continue progress toward completion of major and degree requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete remaining degree requirements.</li> </ul>

\*Add two biology electives and statistics where they fit best in any semester.

## Humanities and Social Sciences Students without Advanced Placement (AP) Credit

<b>First Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>• CHEM 121</li> <li>• CHEM 123</li> <li>• FWIS/ENGL</li> <li>• MATH 101</li> <li>• PSYC/SOCI</li> </ul>	<ul style="list-style-type: none"> <li>• CHEM 122</li> <li>• CHEM 124</li> <li>• FWIS/ENGL</li> <li>• PSYC/SOCI</li> </ul>
<b>Second Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>• BIOC 111</li> <li>• BIOC 201</li> <li>• CHEM 211</li> </ul>	<ul style="list-style-type: none"> <li>• BIOC 211/EBIO 213</li> <li>• CHEM 212</li> <li>• CHEM 215</li> <li>• EBIO 202</li> </ul>
<b>Third Year</b>	
Fall Semester	Spring Semester/Summer
<ul style="list-style-type: none"> <li>• BIOC 301</li> <li>• PHYS 125</li> </ul>	<ul style="list-style-type: none"> <li>• PHYS 126</li> </ul> <p>Summer – Take standardized test between May and June. Complete and submit both primary and secondary applications in a timely manner.</p>
<b>Fourth Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>• Continue progress toward completion of major and degree requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete remaining degree requirements.</li> </ul>

\*Add two biology electives and statistics where they fit best in any semester.

## Students with Advanced Placement (AP) Credit in Biology, Chemistry, Mathematics, and Physics

Some students arrive at Rice with substantial Advanced Placement credit. Talk with an advisor and instructors in the relevant subjects to help you determine whether your background has prepared you for more advanced courses, particularly in biology, chemistry, and physics. Rather than use your AP credit, you may choose to complete the introductory courses at Rice in order to confirm mastery of the material and satisfy the requirements at medical and dental schools that do not accept AP credit.

<b>First Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>• BIOC 111</li> <li>• BIOC 300</li> <li>• FWIS/ENGL</li> </ul>	<ul style="list-style-type: none"> <li>• BIOC 211</li> <li>• CHEM 211</li> <li>• FWIS/ENGL</li> </ul>
<b>Second Year</b>	
Fall Semester	Spring Semester/Summer
<ul style="list-style-type: none"> <li>• CHEM 212</li> <li>• CHEM 215</li> <li>• PSYC/SOCI</li> </ul>	<ul style="list-style-type: none"> <li>• BIOC 301</li> <li>• PSYC/SOCI</li> </ul> <p>Summer – Take standardized test.</p>
<b>Third Year</b>	
Fall Semester	Spring Semester/Summer
	<p>Summer – Complete and submit both primary and secondary applications in a timely manner.</p>
<b>Fourth Year</b>	
Fall Semester	Spring Semester
<ul style="list-style-type: none"> <li>• Continue progress toward completion of major and degree requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete remaining degree requirements.</li> </ul>

\*Add three biology electives and statistics where they fit best in any semester.

## Planning and Tailoring Your Undergraduate Program of Study

### Choosing a Major

As medical and dental schools have limited their entrance requirements to a few basic subjects that are part of any broad undergraduate education, they accept students with a variety of majors. It is a myth that you must major in a natural sciences field to be accepted to medical or dental school. It is perfectly fine to do so if it is a student's greatest interest. However, selecting a non-science major will not diminish a student's ability to gain admission. Former Rice students now attending Texas and out-of-state medical and dental schools have pursued each of the majors offered at Rice.

### Biology, Chemistry, Mathematics, and Physics Placement

Rice's BioSciences, Chemistry, Mathematics, and Physics and Astronomy Departments provide materials to guide students selecting which courses to take during their first year. These documents are available on the OAA website under the section titled Your Flight Path, on the Freshman Year page. The appropriate courses may depend upon your background in the subject and performance on a placement exam as well as your academic interests and prospective majors.

As stated previously, students may use Advanced Placement credit if the schools to which they plan to apply accept AP credit for introductory courses. They may still choose to complete the coursework at Rice in order to reinforce and confirm mastery of the material. If necessary, talk with an advisor and instructors in the relevant subjects to help you determine whether your background has sufficiently prepared you for more advanced courses.

At Rice, students do not need to declare a major until the end of sophomore year, but their freedom of choice is limited somewhat by the type of mathematics and physics taken as a first-year student. If a student is considering engineering or natural sciences over humanities or social sciences majors, they often must enroll in MATH 101, 102 and PHYS 101, 102. Majors in biological sciences may choose PHYS 125, 126. Students who are sure they will not select an engineering or natural sciences major may enroll in MATH 111, 112 and PHYS 125, 126. If students are undecided, they may opt for the mathematics and physics for engineering and natural sciences majors because it preserves the most options.

### Course Load

The average course load for Rice students is between 14-16 credit hours. Note that engineering and natural science courses with labs can be especially time-consuming. First-year students in particular should avoid overloading themselves. It is important to transition successfully to Rice and that begins with a balanced schedule composed of courses in a variety of disciplines. Focus should be placed on developing the time management and study skills that will foster success in advanced coursework and professional school.

Similarly, students should avoid registering for fewer than 12 credit hours or part-time status. Applicants to medical and dental schools must demonstrate the ability to manage a consistently rigorous curriculum that includes advanced science coursework as well as a love of learning through in-depth study of a particular area of interest. If you anticipate an exceptionally challenging semester ahead, it is acceptable to take one of your elective courses pass/fail.

## Pass/Fail

Medical and dental schools will not consider any courses taken pass/fail as fulfilling their requirements. Prerequisite courses must be taken for a letter grade. Courses that are not prerequisites can be taken pass/fail in accordance with the rules in Rice's General Announcements. However, even in cases where it is not absolutely prohibited, it may still be inadvisable. A "D" grade counts as a "Pass" in a pass/fail course, and a "D" grade is probably what skeptical admission committee members will assume was earned in the course.

Students may want to convert a pass/fail to a graded course by submitting the proper online form with the Office of the Registrar before the end of the second week of the following semester. Such requests must be made prior to the deadline. The Office of the Registrar does not automatically reveal letter grades earned in prerequisite courses when you order an official transcript for your application to health profession schools.

## Summer School and Taking Prerequisite Courses at a Different Institution

It is possible to take prerequisite courses over the summer as long as they are taken at Rice or another reputable four year institution. Keep in mind, it is not recommended that you take many of the prerequisites during the summer months. Summer courses often squeeze a semester of work into five weeks. Such a short time typically does not foster the level of mastery students should achieve in the course in order to perform well in advanced coursework and on standardized tests.

Students who take a course during the summer and at another institution should complete the Undergraduate Transfer Credit Request Form and secure approval from the appropriate Transfer Credit Advisor prior to enrollment in that course if the student needs to satisfy degree and/or major requirements at Rice. Courses transferred to Rice will not be calculated into your Rice grade point average. However, professional schools will use these grades when calculating your overall GPA.

## Study Abroad

As medical and dental schools are interested in individuals who are broadly educated, this type of experience can enhance your resume if you immerse yourself in learning about the people, language, and culture of the country in which you study. Studying abroad might also give you exposure to areas of interest such as global health. Students can explore study abroad opportunities and even search for programs focused on medicine and global health on Rice's Study Abroad Office website.

With careful academic planning, any student can study abroad and successfully apply to medical or dental school. While it is acceptable to take science courses abroad, medical and dental schools will not accept credits for prerequisite courses from international institutions. You will also want to schedule your standardized test when you have time to study for it (not during a semester abroad).

## Gap Years

Unless you have earned many AP credits in natural sciences and mathematics, it may be challenging to complete all of the prerequisite courses for medical and dental schools in three years. You will also need to find time to gain clinical experience, engage in community service, and perhaps conduct research before applying. Currently, more than a few Rice students decide to take four years to prepare, and this number will only increase with the recent addition of new medical school and MCAT requirements.

If you choose to spread out the required coursework over four years, then you would take the appropriate standardized test at the end of your senior year, submit your applications to professional schools, and take a year to work or follow other interests while you go through the admission process. A student's "gap year", as it is often called, provides the opportunity to engage in experiences that may not have been available during the undergraduate years or will not be possible after matriculating to a professional school. Students often choose to work in their field of study, gain more clinical exposure, conduct research, engage in service, or travel abroad. It is also common for students to pursue other graduate degrees. As long as your time is spent productively, it can augment your application.

Medical and dental schools look favorably on applicants who are older, more mature, and with more life experiences. Indeed, the median age of applicants to medical school is 24, indicating many students opt to apply after graduating from their undergraduate institution. Therefore, students can feel secure to enjoy their four undergraduate years and take advantage of the many opportunities that Rice offers. Talk with an advisor about all of your possible options and consider that taking four years to complete requirements might give you many more opportunities for achievement.

## Postbaccalaureate Programs

Sometimes students will delay applying to professional schools in order to improve their academic record and/or better prepare for the standardized test. Postbaccalaureate programs, which are begun after earning a bachelor's degree, support students' transition from an undergraduate to a professional school. Students should talk with an advisor about whether such a program would enhance their application and competitiveness for admission.

There are several types of programs available designed to address the various types of deficiencies applicants commonly face. If you have a particular weakness, look for a program that purposely addresses it. Most programs range from one to three years in length. Some programs offer a certificate of completion while others offer a master's degree. There are advantages to seeking programs that lead to a master's degree, especially if you decide ultimately not to pursue admission to a medical or dental school. Select programs may have a linkage agreement with a professional school. In this case, there may be an agreement for conditional acceptance based on how successfully you complete the program.

## Co-curricular Activities

In addition to a strong academic foundation, medical and dental schools look for applicants who possess motivation, maturity, cultural sensitivity, compassion, ethics, and integrity. They expect applicants to have recent exposure to their prospective field of choice, a desire to help others, and the ability to work effectively in teams. Experiences acquired through shadowing, volunteering, leadership roles, jobs and internships, etc. demonstrate applicants' commitment, dependability, intellectual curiosity, empathy, organization and communication skills, and resilience. While high school endeavors may have inspired you to pursue a career in health care, those ventures are just the beginning and should be augmented during college.

However, your undergraduate years at Rice should not be viewed simply as preparation for a health professions school. You should use these years to explore your interests, find out who you are, and discover what you can achieve. As you choose which activities to participate in, consider that some of your experiences at Rice may have a profound influence on your life beyond admission to a professional school.

## Clinical Experience

It is never too early to start gaining clinical experience. While there is no set number of required hours, clinical experience is absolutely necessary for students to learn about health care and to show commitment to a career in the field. Shadowing a physician or dentist demonstrates that the student has taken the initiative to gain first-hand experience in the field in which they intend to work. Direct interaction with patients through work or sustained volunteering in a hospital or clinic is also very helpful. Even students with strong grades and recommendations are sometimes not admitted to medical or dental school if they have had no contact with patients and physicians or dentists in the years immediately prior to applying.

Clinical experience can be obtained by e-mailing a physician or dentist in a small practice and asking if they have space and time available for a student observer. A good place to start is often with a student's own physician or dentist. At large hospitals, like those in the Texas Medical Center, students must apply for clinical observerships. It may take several weeks to submit and process all of the application materials, including a background check and vaccination record, so students should begin well in advance. Through NSCI 399, pre-medical students can obtain credit hours for a physician shadowing experience.

It is natural for pre-medical students to be drawn to organizations related to emergency medicine and possibly becoming certified as an Emergency Medical Technician (EMT). Rice Emergency Medical Services (REMS), for example, is an extremely time-intensive commitment which provides tremendous service to the Rice community. However, medical schools tend to want applicants to have had contact specifically with physicians and not only in emergency medicine. Emergency medical services are great supplements, but not substitutes, for that experience, at least in the view of some admission committees.

## Community Service and Leadership

Medical and dental schools value empathetic and altruistic applicants. Service to the community and to Rice demonstrates dedication to making a positive difference in the lives of others. Furthermore, these activities create opportunities to gain knowledge about social and cultural factors that affect interactions and behavior, cultivate ethical and moral reasoning, and work collaboratively with people from diverse

backgrounds. Again, there is no set number of hours required, and all service does not need to be related to health care. Students should invest themselves in activities and causes that evidence their unique interests.

The Center for Civic Leadership (CCL) offers a range of programs in which students can volunteer, develop their capacities for community-based leadership, and address real-world problems. Additionally, Rice's residential college system affords ample leadership opportunities, and there are more than 200 student organizations in which you can become involved, from Engineers Without Borders to Rice Quidditch League. If you are curious about organizations related to health care and health professions, here are several that you can begin to explore:

- American Red Cross Club at Rice
- Baylor College of Medicine Patient Discharge Initiative
- Camp Kesem Rice
- Colleges Against Cancer
- CURE
- DAWA Black Pre-Health Society
- END7 at Rice
- HOSA – Future Health Professionals
- Pancakes for Parkinson's
- Rice Alliance for Mental Health Awareness
- Rice Global MedicOwl Providers
- Rice Medical Humanities Club
- Rice MusicMDs
- Rice Pre-Dental Society
- Rice Pre-Medical Society
- Rice Pre-Pharmacy Society

## Research

Undergraduate research can help students develop their critical thinking and communication skills, and health profession schools value the experience gained from a sustained commitment of a year or more. However, it is not a required component of a successful application. Research is one of many worthwhile activities in which a student might choose to engage. If you think you might be interested, note that it is not necessary to conduct research in basic or applied sciences. There are opportunities for scholarship in all disciplines. Ideally, students will select an option that piques their intellectual curiosity.

Research experience can be obtained by contacting a faculty member directly about volunteering in their lab. Students typically begin with professors at Rice. Research experience can also be gained in the Texas Medical Center. In either case, most labs have a website describing their work. Students can e-mail their résumé to faculty members and request a meeting to discuss their current research agenda.

Once they have secured a position, students can earn credit hours for undergraduate research in most disciplines. For example, the BIOC 310 website provides tips for students seeking research opportunities in biochemistry and explains the process for obtaining credit: [www.bioc.rice.edu/bios310](http://www.bioc.rice.edu/bios310). Although they are not expected to publish their work, the annual Rice Undergraduate Research Symposium is a great opportunity for students to present their projects. Students with significant dedication to research may desire to complete a senior thesis in their major and/or apply for Distinction in Research and Creative Work, which is granted at commencement.

## The Application Process

### The Open File Process and Health Professions Advising Committee (HPAC)

Each year in early November, the OAA invites students applying to medical and dental schools in the upcoming cycle to participate in the “Open File” process. The OAA provides detailed information regarding the common application services and the Health Professions Advising Committee (HPAC). Students who elect to open a file with the OAA are expected to provide extensive documentation of their accomplishments for the creation of an HPAC letter of evaluation. They receive resources to assist with providing that documentation and producing a stronger application.

The HPAC is composed of the advisors in the OAA as well as faculty members representing each division of study. Their role is to write a detailed letter of evaluation that best represents each student’s candidacy for admission and provides an integrated institutional perspective on a student’s readiness for graduate study and a future career in health care. The OAA also manages the receipt of all individual letters of support requested by students, and ultimately submits a complete packet, including the HPAC letter, to the common application services to accompany each student’s application.

This is an optional service, but has been a Rice tradition for over 25 years. Students are welcome to forgo the “Open File” process and HPAC letter. Instead, their individual letters of support should be submitted directly to the common application services.

### Common Application Services

The application process officially begins when a student starts to complete the web-based common applications to professional schools. They are as follows:

- [AMCAS – American Medical Colleges Application Service](#)
- [TMDSAS – Texas Medical and Dental School Application Service](#)
- [AACOMAS – American Association of Colleges of Osteopathic Medicine Application Service](#) -
- [AADSAS - Associated American Dental Schools Application Service](#)

AMCAS and TMDSAS are both common application services for allopathic (MD) medical schools. TMDSAS applies only to Texas public schools (Baylor College of Medicine is a private institution and, therefore, uses AMCAS). AACOMAS is the central service for osteopathic (DO) schools, and AADSAS is for dental schools.

Students are responsible for submitting their primary application materials to one or more of these services. This includes academic and biographical information, course work, work and co-curricular activities, and essays. Official transcripts, standardized test scores, and letters of evaluation must be requested and released. Each service provides a detailed instruction manual for completing their application, and staff is readily available to answer any questions. Once an application has been processed and verified as complete, it is transmitted in its entirety to the specific professional schools selected.

## Deciding Where to Apply

Choosing which professional schools to apply to is a very personal decision based on your unique goals and interests. There are numerous factors to carefully consider, so you will want to start investigating schools at least several months before you begin to complete your application.

For most applicants, the highest likelihood of acceptance is at public schools within the state where you have legal residence. Therefore, this is a good place to start forming your list. Identify the mission and curriculum of each program and assess whether your goals align with the institution. Gather information about the location of the school as well as the size and demographics of the campus community. Review the published GPA and MCAT scores for each school as compared to your own credentials, and select a healthy mix of schools with median scores higher, on par with, and lower than yours. Finally, you should weigh not only the cost of attendance, but also the potential cost of application (including application fees, costs associated with interviewing, acceptance deposits, etc.).

Each October, the OAA hosts a Health Professions Fair for students to speak with admission counselors from a variety of professional schools. The following resources can also help you begin to get a sense of each school and what they have to offer.

- [Medical School Admission Requirements \(MSAR\)](#)
- [Osteopathic Medical College Information Book](#)
- [ADEA Official Guide to Dental Schools](#)

## Texas Residency

Many states have policies governing the proportion of in-state to out-of-state applicants that may be admitted to their public colleges and universities, including medical schools. In Texas, TMDSAS uses information provided in the application to make an initial determination about residency and places the applicant in the appropriate pool: resident vs. non-resident. Determining residency for the applicant pool is different than determining residency for tuition, voting, or taxing purposes. For more information about determining and establishing residency in Texas, visit: <https://www.tmdsas.com/medical/residency.html>. Questions should be directed to [info@tmdsas.com](mailto:info@tmdsas.com).

## Medical and Dental Scientist Training Programs

Medical and dental scientist training programs, many of which are funded by the National Institutes of Health, prepare students to bridge the gap between basic science and the practice of medicine. Graduates of combined MD/PhD or DDS/PhD programs often go on to become faculty members at universities and research institutes. They spend most of their time conducting research, in addition to caring for patients, in order to advance knowledge and develop new treatments for diseases.

These programs admit only a select group of exceptional students who possess superior research and academic potential each year, so competition is great. It is desirable for applicants to have more than a year of significant research experience under the same mentor as well as presentations and/or publications of their work. Applicants must request individual letters of support from each of their research mentors, and they are required to submit additional essays stating their reasons for pursuing a combined degree and describing their research experiences.

## Individual Letters of Support

Medical and dental schools consider confidential letters of support very carefully in evaluating applicants. Typically, students request letters from three or four individuals, including at least one science professor, a major subject-area professor, and another mentor/advisor. The ideal set of recommendations is highly dependent on the applicant. However, selecting the right ones is contingent upon having a network of individuals who know you well through your courses and clinical, volunteer, leadership, and research activities. Therefore, it is never too early to begin developing relationships with professors and mentors who might provide a strong letter on your behalf. Bear in mind, their familiarity with you is generally more important than the prestige of their position.

To successfully request and obtain strong letters of support, provide your prospective letter writers with adequate notification and appropriate supporting documents, including an unofficial transcript, curriculum vitae, draft personal statement, and waiver form (provided to you by the OAA). Science professors, in particular, receive many requests for letters of support, and to write a thoughtful letter takes substantial time. After letters are completed, you should send thank you notes and updates on the progress of your admission to your letter writers.

As mentioned before, the OAA acts as an intermediary in the letter process for students who have opened a file. After all letters requested by students are received by the OAA, they are submitted along with the HPAC letter to the common application services.

## Personal Statement

Applicants are required to submit a personal statement, which is limited to 5300 characters (including spaces), that distinguishes themselves from other applicants. The applicant's passion and commitment to becoming a physician or dentist should be evidenced in the essay by academic, clinical, volunteer, and personal experiences. The writing process necessitates several rounds of significant revision, so drafting the personal statement should not be delayed. The Center for Written, Oral, and Visual Communication (CWOVC) offers workshops and one-on-one consultations to provide students with feedback on their personal statements.

## Reporting Student Conduct or Honor Code Violations

By entering Rice University, students agree to behave in ways that are respectful of others in the community, maintain an atmosphere conducive to learning and scholarship, and adhere to the policies outlined in the Student Handbook and Honor Code. Rice holds accountable students found responsible for behavior that violates these standards and expectations. Similarly, medical and dental schools expect good judgement, honesty, and integrity in their applicants. Therefore, applicants must report any institutional action, even if such action did not interrupt enrollment. Underage drinking, plagiarism, or other conduct issues can all make admission more difficult.

While it is best not to have any infractions to report, depending upon the severity of the infraction, it need not be the end of your dream. Health profession schools will want to know that you take responsibility for your mistakes and that you have learned from your lapse in judgment. Full disclosure will enable the schools to more effectively evaluate this information within the context of your credentials. If you are in doubt about whether to report an offense, meet with an advisor to discuss the particulars. They are in a position to help you understand how to present your infraction honestly and appropriately.

## Secondary Applications

After the primary application, medical and dental schools commonly request supplemental information from applicants. A set of school-specific essays and an additional application fee usually compromise the secondary application. Secondary application practices vary among institutions. Some schools send invitations to all students applying to their school, other schools only send invitations after reviewing the primary application, and some schools do not have a secondary application at all. Applicants must check with each school for their policy.

It takes a significant amount of time to prepare customized responses to prompts, like “Why are you interested in applying to our school?” Applicants should not procrastinate. It is best to submit secondary applications as soon as possible, preferably within two weeks of receipt.

## Interviews

Among the most important aspects of the application process is the interview. The principal goal is to determine if an applicant possesses the necessary nonacademic attributes to succeed in health profession school and clinical practice. Interviewers also try to determine an applicant’s “fit” with the school. For students, interviews present an opportunity to add a personal dimension to the application, ask questions, and tour the campus.

There are different kinds of interviews, such as standard one-on-one interviews or multiple mini interviews (MMIs). After identifying the interview format for each school, applicants should take appropriate steps to prepare and practice answering possible interview questions. This includes researching each school and re-familiarizing themselves with the materials submitted in their application. Applicants also want to be conversant in current issues and trends related to health care.

The Rice Pre-Medical Society and Rice Pre-Dental Society coordinate mock interviews in the spring semester to help Rice applicants gain knowledge of what they can expect during an interview, practice, and reduce feelings of nervousness. The Center for Career Development (CCD) and Center for Written, Oral, and Visual Communication (CWOVC) also offer mock interviews.

## Financing Your Medical/Dental Education

The cost of a medical or dental education depends on many factors, and students rely on a variety of means to finance their educations, such as grants, scholarships and loans. Devoting time now to planning how you will pay for health profession school is just as important as applying.

The AAMC's FIRST (Financial Information, Resources, Services, and Tools) program provides information on student debt management specifically for medical students: <https://students-residents.aamc.org/financial-aid/>. Texas has the Joint Admission Medical Program (JAMP), for economically disadvantaged students who want to go to medical school. Find more information at: <http://www.utsystem.edu/jamp/homepage.htm>.

Likewise, the ADEA website features financial planning resources for dental students at Money Matters: [http://www.adea.org/GoDental/Money\\_Matters.aspx](http://www.adea.org/GoDental/Money_Matters.aspx). Further information is offered by the ADA: <http://www.ada.org/en/education-careers/dental-student-resources/financial-resources-for-students-and-recent-gradua>.



## Meeting with an Advisor

Health professions advising at Rice is handled by an entire community of advisors, including Divisional Advisors (pre-major faculty advisors) and Peer Academic Advisors (PAAs). Each has significant training and resources provided by the OAA regarding health professions. Most student questions can be answered accurately and efficiently by asking any member of this large community, many of whom are readily available in the residential colleges. However, if students need additional assistance regarding health professions, they should call 713-348-4060 to set an appointment with one of six official health professions advisors registered with the Association of American Medical Colleges (AAMC). While most Rice students may be interested in medicine or dentistry, information is available about other fields, such as pharmacy, veterinary medicine, public health, and other allied health programs.

## Health Professions Advising Newsletter

The OAA's Health Professions Advising Newsletter is designed to communicate updates and events of interest to students preparing for a career in the health professions. Current Rice students as well as alumni can request to be added to our newsletter mailing list by sending an email to [aadv@rice.edu](mailto:aadv@rice.edu).