Frequently Asked Questions about the Medical Imaging Sciences major
(formerly Allied Health Technologies)

Answered by Dr. Douglas Morrison, Faculty Advisor for Medical Imaging Sciences majors at Rutgers-Newark, Associate Professor of Biology, Boyd Hall 407, dmorrison@andromeda.rutgers.edu, Phone 973-353-1268 or 5347.

The Newark College of Arts and Sciences at Rutgers-Newark and the Rutgers School of Health Related Professions (Rutgers-SHRP) offer a joint Bachelor of Science degree in Medical Imaging Sciences. (The old name “Allied Health Technologies” was replaced in September 2012.) Medical Imaging Sciences majors complete their prerequisite science and math courses at Rutgers-Newark. They apply to Rutgers-SHRP in January for admission to one of four MIS programs: Cardiac Sonography, Diagnostic Medical Sonography, Nuclear Medicine, or Vascular Sonography. All four 15-month programs begin at Rutgers-SHRP in September.

Admissions are competitive and not guaranteed. Minimum admissions requirements include an overall GPA of 2.75 and grades of C or better in all pre-requisite science courses taken at Rutgers-Newark. Students who transfer into Rutgers-Newark must complete at least half their biology credits at Rutgers-Newark to qualify for the joint degree program.

General information about careers in MIS

Q. What can I do with a major in Medical Imaging Sciences?

Medical (or Diagnostic) Imaging uses various technologies to produce images of structures within the human body in ways that are as non-invasive as possible. These images are used as a diagnostic tool to identify and assess potentially pathological internal conditions, including congenital defects, physiological changes, organ & vessel function, and fetal development. Students graduating with degrees in MIS become members of health care teams contributing to the diagnosis and treatment of disease.

For a description of careers in any of the four areas of Medical Imaging Sciences, go to http://shrp.rutgers.edu/dept/med_imaging/index.html. Additional information about Diagnostic Medical Sonography is available at www.sdms.org or www.ardms.org.

Q. What are my chances of getting a good job after I graduate with a BS in MIS?

Medical Imaging Sciences majors are readily employed in a variety of health care, industrial, governmental, and educational settings. Starting salaries for full-time positions are in the $50-60,000 range. Current salary information is available on line from the US Department of Labor Statistics:


Q. Where can I go for more information?

After reading the “Frequently Asked Questions” below, feel free to email Dr. Morrison at Rutgers-Newark (dmorrison@andromeda.rutgers.edu) or the director of the program you find most interesting:

Cardiac Sonography: Stan Ort - ortst@shrp.rutgers.edu
Diagnostic Medical Sonography: Cynthia Silkowski - silkowcy@shrp.rutgers.edu
Nuclear Medicine: Michael Teters - tetersms@shrp.rutgers.edu
Vascular Sonography: Stan Ort – ortst@shrp.rutgers.edu
Getting started

The Department of Biological Science at Rutgers-Newark and the Rutgers School of Health Related Professions (Rutgers-SHRP) offer a joint Bachelor of Science degree program in Medical Imaging Sciences (MIS). MIS majors complete their prerequisite science and math courses at Rutgers-Newark (or one of the other affiliated colleges). They then apply to Rutgers-SHRP in January for admission to one of the four 15-month programs that begin in September. Admissions are competitive. Minimum admissions requirements include an overall GPA of 2.75, with grades of C or better in all pre-requisite science courses taken at Rutgers-Newark.

Q: I am already a student at Rutgers-Newark. How do I declare an MIS major?

Declaring a MIS major on your application for admission, or during your campus orientation, is not sufficient. You are not officially a MIS major until you walk into the Department of Biological Sciences (Boyden 206) and fill out a "Declaration of Major" form. Before you can declare a MIS major, you must have completed at least 24 undergraduate credits. You will also need to have completed Concepts in Biology 200 and Foundations 201 (Cell & Molecular) and Foundations 201 (Ecology & Evolution) with labs. If you completed General Biology 101-102 prior to fall 2011, you can substitute General Biology 101-102 for Concepts in Biology. The Biology Department secretary will assign Dr. Morrison as your faculty advisor. To set up a 30-minute appointment with Dr. Morrison (me), write your name on the sign-up sheet posted on my office door (Boyden 407) or mail me at dmorrison@andromeda.rutgers.edu. During our meeting, if you decide MIS is right for you, I will help you customize a tentative 2-year course plan. Return the signed declaration of major form to the Biology Department secretary, who will notify the Registrar and the Office of Academic Services.

Q. By declaring my MIS major at Rutgers-Newark, is my admission to Rutgers-SHRP guaranteed?

No. Before you can start any of the four MIS programs, you must have completed all your General Education courses, all your MIS prerequisites, and have a 2.75 overall grade point average for all the courses you took at Rutgers-Newark.

Be aware that admissions are competitive. The MIS program is affiliated with Rutgers-Newark and several other 4-year colleges in New Jersey. A 2.75 GPA for all courses taken at Rutgers-Newark represents the minimum GPA. The higher your GPA, the better your chances for admission.

Q. I am a transfer student. How many of my science courses will transfer to Rutgers-Newark?

Usually all the courses taken at a New Jersey community college are transferable. Community Colleges offer many of the biology, chemistry, physics and math prerequisites listed in the table below. One limiting factor is that transfer students must complete at least half their biology credits at Rutgers-Newark. The first step is to apply to Rutgers-Newark. Once accepted, a final determination of course equivalencies will be made by the Office of Academic Services and by Dr. Morrison.

Q. I already have a bachelor’s degree from a college in the United States. What do I need to do?

If you have graduated with a BA or BS from a college in the United States, you are able to apply directly to Rutgers-SHRP for its "second bachelors" program. The prerequisite science courses are the same for you as for students in the "joint degree" BS in MIS. If Rutgers-SHRP accepts you into its "second bachelor’s" program, you will attend the exact same lectures and labs at Rutgers-SHRP as the undergraduates at Rutgers-Newark in the “joint degree” BS in MIS.
You will need of complete any missing prerequisites before you can start at Rutgers-SHRP. These courses can be taken at Rutgers-Newark, or (with pre-approval from your program director at Rutgers-SHRP) at any 2- or 4-year college in New Jersey. You will not need to take any of Rutgers-Newark’s General Education requirements. You may need to repeat some of your science courses if you took them more than 7 years ago. This is especially true of upper-level biology courses like Immunology and Cell Biology.

Q. I am an international student with a bachelor’s degree from another country. Can I apply for Rutgers-SHRP’s second bachelor’s degree in MIS?

Only students with their first bachelor's degree from the United States qualify to apply to Rutgers-SHRP’s “second bachelor’s” degree program. However, you can still earn a BS in MIS by following the undergraduate “joint degree” route. That means you will need to complete (or transfer in) all the math and science courses required by Rutgers-SHRP, and all the General Education classes required by Rutgers-Newark. Some of your previously completed courses will likely be transferrable, depending on Dr. Morrison’s analysis of your WES academic report.
Courses to be completed at Rutgers-Newark

Q. What science and math courses will I need to complete before going to Rutgers-SHRP?

In addition the two writing intensive and other "General Education" requirements, MIS majors must complete over 60 credits in math and sciences courses:

<table>
<thead>
<tr>
<th>CORE REQUIREMENTS *</th>
<th>Cr</th>
<th>Prerequisites</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concepts in Biology 200</td>
<td>4</td>
<td>None</td>
<td>At NJIT in fall, spring</td>
</tr>
<tr>
<td>Foundations of Biology 201 (Cell &amp; Molecular)</td>
<td>3</td>
<td>Gen Chem 115 plus Concepts 200</td>
<td>Fall, spring, summer 1</td>
</tr>
<tr>
<td>Foundations (C&amp;M) Lab 202</td>
<td>1</td>
<td>Concurrent registration in Foundations 201</td>
<td>Fall, spring, summer 1</td>
</tr>
<tr>
<td>Foundations of Biology 205 (Ecology and Evolution)</td>
<td>3</td>
<td>Concepts 200</td>
<td>At NJIT in Fall, spring</td>
</tr>
<tr>
<td>Foundations (E&amp;E) Lab 206</td>
<td>1</td>
<td>Concurrent registration in Foundations 206</td>
<td>At NJIT in Fall, spring</td>
</tr>
<tr>
<td>Comp Anatomy Vertebrates 285</td>
<td>4</td>
<td>Foundations 201, 202; Foundations 205, 206</td>
<td>Fall only</td>
</tr>
<tr>
<td>Mammalian Physiology 340</td>
<td>4</td>
<td>Foundations 201, 202; Foundations 205, 206</td>
<td>At Rutgers fall, summer 1; at NJIT spring;</td>
</tr>
<tr>
<td>Genetics 352</td>
<td>3</td>
<td>Foundations 201, 202; Foundations 205, 206</td>
<td>Spring and summer 2</td>
</tr>
<tr>
<td>General Chemistry 115</td>
<td>4</td>
<td>Concurrent registration in Precalculus 114</td>
<td>Fall, spring, summer 1</td>
</tr>
<tr>
<td>General Chemistry Lab 113</td>
<td>1</td>
<td>Concurrent registration in Gen Chem 115</td>
<td>Fall, spring, summer 1</td>
</tr>
<tr>
<td>General Chemistry 116</td>
<td>4</td>
<td>Gen Chem 115</td>
<td>Spring, summer 2</td>
</tr>
<tr>
<td>General Chemistry Lab 114</td>
<td>1</td>
<td>Concurrent registration in Gen Chem 116</td>
<td>Spring, summer 2</td>
</tr>
<tr>
<td>Organic Chemistry 335</td>
<td>4</td>
<td>Gen Chem 115-116</td>
<td>Fall, summer 1</td>
</tr>
<tr>
<td>Organic Chemistry 336</td>
<td>4</td>
<td>Organic Chem 335</td>
<td>Spring, summer 2</td>
</tr>
<tr>
<td>Organic Chemistry Lab 331</td>
<td>2</td>
<td>Concurrent registration in Organic Chem 336</td>
<td>Fall, spring; but not in summer</td>
</tr>
<tr>
<td>General Physics 203</td>
<td>4</td>
<td>Precalculus 114</td>
<td>Fall and summer 1</td>
</tr>
<tr>
<td>General Physics 204</td>
<td>4</td>
<td>General Physics 203</td>
<td>Spring and summer 2</td>
</tr>
<tr>
<td>Intro Physics Lab 205</td>
<td>1</td>
<td>with Gen Physics 202</td>
<td>Fall and summer 1</td>
</tr>
<tr>
<td>Intro Physics Lab 206</td>
<td>1</td>
<td>with Gen Physics 204</td>
<td>Spring and summer 2</td>
</tr>
<tr>
<td>Statistics 211 at Rutgers, or Prob &amp; Stats 105 at NJIT</td>
<td>3</td>
<td>None</td>
<td>Fall, spring and summer</td>
</tr>
<tr>
<td>Precalculus 114 or Calculus 135</td>
<td>3</td>
<td>College Algebra; Precalculus 114</td>
<td>Fall, spring and summer</td>
</tr>
<tr>
<td>Medical Terminology *</td>
<td>3</td>
<td>None</td>
<td>On-line certificate course</td>
</tr>
</tbody>
</table>

* The Nuclear Medicine program does not require Medical Terminology at this time (2012).
Q. Medical Terminology is not taught at Rutgers-Newark, so how do I fulfill this prerequisite?

The three Sonography programs (Cardio, Diagnostic Medical, and Vascular) require you to complete a course in Medical Terminology before you start classes at Rutgers-SHRP in September. Most students fulfill this prerequisite by taking an on-line certificate course in the summer, after they have been accepted to Rutgers-SHRP. Rutgers-SHRP is developing its own on-line course, “Medical Terminology for the Imaging Professional,” an independent study course with video captured lectures.

Q. What about Rutgers-Newark's General Education Requirements?

The General Education requirements for MIS majors are the same as for every other student in the Newark College of Arts and Sciences at Rutgers-Newark. That means:

The new General Education requirements for students who begin their undergraduate education in fall 2012 or later are described at http://www.ncas.rutgers.edu/core-curriculum-overview. The categories include Basic Writing Skills (6), Quantitative Reasoning (3), Natural Sciences (8), Social Sciences (8), History & Literature (9), Arts & Media (3) and Other Liberal Arts (3).

For students who began their undergraduate education at Rutgers (or a community college) before Fall 2012, the requirements are http://www.ncas.rutgers.edu/oas/general-curriculum-requirements-NCAS. The categories include English Composition (6), Mathematics Proficiency (3), History (6), Literature (6), Natural Sciences (11), Social Sciences (6), Fine Arts (3) and Interdisciplinary (3).

In both cases, if you complete an Associate's degree from a New Jersey community college before you transfer to Rutgers-Newark, then all your Gen Ed requirements are considered fulfilled, with one exception: You still need 2 writing intensive courses, because these are part of an “upper division” (junior-senior-year) writing requirement.

All of your General Education courses must be completed before starting at Rutgers-SHRP.

Q. Will I need to complete a writing intensive course in Biology?

Rutgers-Newark requires all students enrolling after September 2001 to have two writing intensive courses, one of them “in the department of their major.” Since the MIS major is administered by the Department of Biological Sciences, one of your writing intensive (WI) course should be in Biology. However, if all the WI courses in Biology are closed, the MIS faculty advisor (Dr. Morrison) can give you permission to take both of your WI courses outside of Biology. Decisions are made on a case-by-case basis.

Q: As part of Rutgers-Newark's General Education Requirements, do I need to complete (the old) ‘15 restricted electives’ or (the new) ‘second concentration’?

This requirement (both new and old versions) is met by the combination of your science courses at Rutgers-Newark and your MIS courses at Rutgers-SHRP, because all your biology courses are treated as if they were “outside” the MIS major. As a MIS major, you complete 22 credits in biology at Rutgers-Newark and then more than 40 credits of coursework at Rutgers-SHRP. When you finish at Rutgers-SHRP, you will have more than enough course credits to graduate.

Q. Why doesn't my “Degree Navigator” recognize the MIS prerequisites I have completed?

Degree Navigator is far from perfect and often makes mistakes. Especially in the case of transfer students, Dr. Morrison and the Office of Academic Services make the final decisions about prerequisites on a case-
by-case basis. Degree Navigator is not yet sophisticated enough to recognize unique combinations of
transfer courses that are equivalent to a MIS prerequisite.

The prerequisite courses for a BS in MIS are very similar to those needed to graduate with a Bachelor of Arts (BA) degree in Biology. Can I double major in MIS and Biology?

Majoring in MIS leads to a Bachelor of Science degree. So to graduate with a second major in biology, you must complete the requirements for a Bachelor of Science in Biology, not the Bachelor of Arts in Biology. The BS in Biology requires 3 semesters of Calculus, a year of computer programming, Linear Algebra, and a course in Computational Biology.

Completing the requirements for a BS in Biology does NOT mean that you will have two bachelor’s degrees. Your double major (Medical Imaging Sciences and Biology) will appear only on your transcript, not on your diploma.

My advice? For most students, the time it takes to complete all the courses needed for a BS in Biology will delay graduation by a full year. A second major inside a BS degree is just not worth the time and money. It would be better to wait until after you graduate with the BS in MIS and then take graduate courses toward a Master’s degree.

Applying to Rutgers-SHRP

Q. When and how do I apply for my final 15 months at Rutgers-SHRP?

For all four of the programs in Medical Imaging Sciences, applications are due in January.

Print a copy of the application form from the UMDNJ-SHRP website at http://shrp.rutgers.edu/prospective_students/admissions/documents/ApplicationforAdmission.pdf.

Fill in the form and mail it to Rutgers-SHRP, Office of Enrollment Services, 65 Bergen Street, Room 149, Newark, New Jersey 07107, along with a check to cover the application fee, which was $75 in 2012.

Ask Rutgers-Newark to mail a copy of your transcript. Go to "Student Online Services" on the Rutgers-Newark registrar's website (https://transcripts.rutgers.edu/transcripts/index.html) and ask for a transcript to be sent directly to Rutgers-SHRP, Office of Enrollment Services, 65 Bergen Street, Room 149, Newark, New Jersey 07107.

The MIS admissions committee will invite you for an interview in February or March. Rutgers-SHRP mails out acceptance packets in April or May. Classes at Rutgers-SHRP start in September.

Q. When applying to Rutgers-SHRP, will I need to obtain letters of recommendation, write a personal statement, and/or go for an interview?

Resumes and letters of recommendation are not solicited. However, each program director usually interviews all applicants to his/her program. Go to the interview prepared to write an essay explaining why you want a career in the program you have chosen.
After being accepted to Rutgers-SHRP

Q. It is April and I just received an acceptance packet from Rutgers-SHRP. What do I do now?

Along with the acceptance letter you will receive several forms. The most important form is the one that says you accept Rutgers-SHRP’s invitation and plan to attend the program. Sign and return that form as soon as possible, along with a check or money order to cover two fees. The first fee is a deposit ($200 in 2012) that holds your place in the program and will be credited toward your first semester’s tuition. The second fee ($85 in 2012) is for the “criminal background check” and fingerprinting required of all health professionals. All fees are subject to change.

Also in the packet is a list of courses with highly technical titles. This is just a list of courses you will be taking at Rutgers-SHRP. Your signature indicates you understand the program’s requirements for graduation. Sign and mail it in the same envelope as your signed acceptance and payment.

Bring the “Verification of Prerequisites” form to Dr. Morrison (Boyden 407), or drop it off in his mailbox (Boyden 206). Dr. Morison will verify that you have all the prerequisite math and science courses before the start the program. He will then carry the form to Dean Sofia Pinto-Figueroa, Assistant Dean of Pre-Professional Services, who will certify that you have all the “general education” requirements. Your form with then be emailed directly to Rutgers-SHRP. Your acceptance is valid only if you earn a C or better in all your spring semester courses.

The acceptance packet also includes information about financial aid (see below).

Q. Will I be able to get financial aid to help pay tuition at Rutgers-SHRP (42-45 credits at over $300 per credit) ?

A. Since the BS in MIS is an undergraduate degree, you have the same opportunities for scholarships and loans at Rutgers-SHRP as any other undergraduate major at Rutgers-Newark. After you receive your acceptance packet from Rutgers-SHRP, notify the Rutgers-Newark financial aid office that you plan to attend Rutgers-SHRP. To apply for financial aid at Rutgers-SHRP, call 973-972-4376. Any of the counselors will be able to help you. Or visit http://rbhs.rutgers.edu/studentfinancialaid/index_new_brow.htm and click on “Application Process.”

While at Rutgers-SHRP

Q. How much will it cost to complete the MIS program at Rutgers-SHRP?

A. Tuition and fees are subject to change from year to year. However, let me give you a rough idea of what to expect. At Rutgers-SHRP for 2011-2012, undergraduate tuition for in-state residents was $319 per credit. [Tuition was 50% more for out-of-state students.] Credits vary slightly for different programs: Cardiac 42, DMS 44, Nuclear Medicine 45, and Vascular 44. So tuition in 2011-12 was about $14,000.

You then need to add in a multitude of fees. An up-to-date list of fees can be found at Rutgers-SHRP’s website http://shrp.rutgers.edu/general/regist_04_tuition_fee.html. The list of fees is long and intimidating, but not all the fees apply to you! Of the many fees in 2011-12 that did apply to MIS students, the three largest were the Lab Intensive Fee ($35 per credit), a Technology Fee ($250 per semester), and a Student Health Fee ($350/semester). The table below omits one-time small fees like the application fee ($75), criminal background check fee ($85), graduation fee ($40), and a general service fee ($50)! You get the idea…
### Costs for 2011-12 Academic Year

<table>
<thead>
<tr>
<th>Cost</th>
<th>Cardiac (42 cr)</th>
<th>Nuclear Medicine (45 cr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition ($319/credit)</td>
<td>13,398</td>
<td>14,355</td>
</tr>
<tr>
<td>Lab intensive fee ($35/credit)</td>
<td>1,470</td>
<td>1,575</td>
</tr>
<tr>
<td>Technology fee ($250/semester)</td>
<td>750</td>
<td>1,000</td>
</tr>
<tr>
<td>Student Health fee ($350/semester)</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>Additional fees (see Rutgers-SHRP’s website)</td>
<td>???</td>
<td>???</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15,968 + ???</strong></td>
<td><strong>17,280 + ???</strong></td>
</tr>
</tbody>
</table>

### Q. Are all the Rutgers-SHRP courses taught in Newark?

No. The lectures and laboratories for MIS are taught at Rutgers-SHRP’s Scotch Plains campus (1776 Raritan Road, Scotch Plains), not in Newark. Scotch Plains is 3 miles west of the Garden State Parkway and 6 miles south of Interstate 78. To get from Newark to Scotch Plains takes 30-45 minutes by car and 1.5-2 hours by bus. For a google map, go to:

https://maps.google.com/maps?oe=utf-8&aq=t&client=firefox-a&q=Google+map,+1776+Raritan+Road,+Scotch+Plains,+NJ&ie=UTF-8&hq=&hnear=0x89c3b128410e4ab5:0x15839f1645e9ea87.1776+Raritan+Rd.+Scotch+Plains,+NJ+07076&gl=us&ei=KILqT9fGA-nb0QGRpaS7AQQ&ved=0CAgQ8gEwAA.

MIS students are also required to complete four clinical practice courses (a total of 18-24 weeks) at affiliated hospitals and laboratories located throughout New Jersey and in New York City. Depending on which of the four programs you are in, Clinical Practice courses can start as early as November of the first semester and can make up the major portion of the program.

### Graduation from Rutgers-Newark and Rutgers-SHRP

### Q. When I finish at Rutgers-SHRP, do I have to file for graduation at Rutgers-Newark, too?

Yes. As a CLS major, you will be graduating in January, so file for Rutgers-Newark graduation in October. If you have completed a second major at Rutgers, filing in October will give that department time to certify you for that major. You don’t need to come to campus to file for Rutgers graduation. However, you must fill out the “Diploma Application Form” found online at http://www.ncas.rutgers.edu/graduation.

### Q: Since I will be graduating from Rutgers-SHRP in January, when can I walk in Rutgers-Newark and Rutgers-SHRP’s graduation ceremonies?

Students complete the MIS programs in December and are considered January graduates. Rutgers-SHRP honors these graduates in May after they have completed their program. The same is true at Rutgers-Newark; namely, January graduates are honored at ceremonies the following May.
Q. Where can I go for more information?

Information about all four Medical Imaging Sciences programs is available at Rutgers-SHRP’s website: http://shrp.rutgers.edu/dept/CLS/index.html

For questions about the MIS major at Rutgers-Newark, contact:

Dr. Douglas Morrison  
Department of Biological Sciences  
Rutgers-Newark/Boyden 407  
(973) 353-1268  
dmorrison@andromeda.rutgers.edu

You can also contact the director of Medical Imaging Sciences at Rutgers-SHRP:

Mr. Michael Teters  
Department of Medical Imaging Sciences  
Rutgers-SHRP  
(908) 889-2449  
tetersms@shrp.rutgers.edu

Revised November 2013