Welcome to the Professional Science Master’s Information Session
On the Phone

• Dr. Deborah Silver
Executive Director
Professional Science Master’s Program
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About Rutgers

• State University of New Jersey: Rutgers is the sole university in the United States that is a colonial college, a land-grant institution, and a public university.

• Founded in 1766.

• Research-Intensive University with $700M sponsored research

• Campuses:
  – New Brunswick Campuses: Busch, College Ave, Douglas/Cook, Livingston
  – Newark
  – Camden

• More than 65,000 students, 20,000 Graduate Students

• More than 400,000 alumni

• 33 Schools & Colleges

• Only public New Jersey university in the Association of American Universities (AAU), a group comprising North America’s 61 leading research universities.

• Rutgers has more than 500 active U.S. patents

Rutgers Fun Fact: it is the birthplace of college football
About the PSM @ Rutgers

Name of our office: Professional Science Master’s Program (PSM Program)

– Master of Business & Science Degree (MBS Degree)
  • Matriculated
  • Non Matriculated (Non Degree Students)
  • Joint Degree
  • PSM affiliated

– Certificates:
  • Science & Technology Management
  • Pharmaceutical & Clinical Trials (online option available)
  • Computational & Data Enabled Science & Engineering
  • Certificate in Intellectual Property & Tech Transfer

– Continuing Education
WHY & WHAT IS A PROFESSIONAL SCIENCE MASTER’S DEGREE?
Professional Science Master’s Degree ➔ creating a science driven business professional

- Combines science/engineering courses in a particular discipline with “professional” courses, including business, policy, and/or law
- Different science/engineering concentrations reflect professional career opportunities
Professional Science Master’s Degrees

→ targeted towards industry; curriculum answerable to industry

Courses for General Business Functions

- MBA – All Business Courses

- Master of Business & Science Degree: combination of technical & business courses

Academic Careers

- Traditional MS – technical courses, preparation for Ph.D.

- PhD – totally technical focus, for a research career

Professional Science Master’s Degrees

Preparation for careers in Industry
What’s it worth?
Earnings Boost from Obtaining a Graduate Degree

<table>
<thead>
<tr>
<th>Agriculture &amp; Natural Resource</th>
<th>Biology &amp; Life Science</th>
<th>Computer &amp; Mathematics</th>
<th>Engineering</th>
<th>Physical Sciences</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>35%</td>
<td>101%</td>
<td>31%</td>
<td>32%</td>
<td>70%</td>
<td>40%</td>
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“What’s it Worth – The Economic Value of College Majors”,
-Georgetown University, Center on Education & the Workforce
Master of Business & Science (MBS) Degree

• Combination of a traditional MS and courses from an MBA -- integrated coursework
• Concentrated tracks in science & engineering:
  – “MBS with a concentration in ****”
• 43 Credits: 24 science, 19 business (including 3 for Capstone, and 1 for Ethics)
• Capstone integrates science and business, teaching students to write a business case and analyze technology
• Internship/research component
• Part-time, Full-time, Networking events
WELCOME TO THE MASTER OF BUSINESS & SCIENCE DEGREE

Alumni student dinner

Capstone presentation

Interview workshop

Ecocomplex tour

Regulatory affairs poster presentation

Intellectual Property class trip to USPTO

Lecture series
**MBS | SCIENCE CONCENTRATIONS**

**LIFE SCIENCES**
- Biotechnology & Genomics
- Chemistry
- Drug Discovery & Development
- Food Science
- Horticulture & Turfgrass Science
- International Agriculture
- Kinesiology and Applied Physiology
- Personal Care Science
- Sustainability
- Urban Environmental Analysis

**ENGINEERING MANAGEMENT**
- Biomedical Engineering
- Chemical & Biochemical Engineering
- Electrical & Computer Engineering
- Engineering Management
- Pharmaceutical Engineering
- Quality & Reliability Engineering

**COMPUTER AND INFORMATION SCIENCES**
- Actuarial Science
- Analytics: Discovery Informatics & Data Sciences
- Applied Computing
- Geospatial Information Systems & Technology
- Industrial Mathematics
- Information Technology
- Social Media & Networking
- Statistics & Biostatistics
- User Experience Design (UXD)
## MBS Degree

<table>
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<th>Science Courses within a Concentration</th>
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<td>• 8 courses (24 credits) in the sciences</td>
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<td>• 19 credits (6 courses + 1 credit ethics)</td>
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<td>• Business courses from business school and MBS</td>
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<td>• Capstone: business case development</td>
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<th>Other MBS requirements</th>
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<td>• Relevant work experience (internship)</td>
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<tr>
<td>• Lectures, events, networking</td>
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- **Students take science + business courses**
- **It is a master of science degree (professional science master’s)**
- **Total 43 Credits**
Science Courses

- 8 per concentration (internship may be part)
- Differ by concentration
- All motivated by practical sciences needed for various STEM careers
- All of the requirements are on the mbs.rutgers.edu website
- Example curriculums are shown in next slides
24 credits (8 courses in Drug Discovery) and 19 credits in Business
4 required courses + 4 electives

**Required (CORE) courses:**

- 16:137:615 Concepts in Biotechnology & Genomics (3)
- 16:137:616 NextGen Biotechnology & Genomics (3)
- 16:115:512 (01:694:408) Molecular Biology and Biochemistry (3) OR 16:115:504 Biochemistry (3)

*part of business electives:*

- 16:137:501 Fundamentals of Intellectual Property (3)
Core Courses (4)
Students must take one course in each of the following areas + electives:
1. Database Management
2. Internet & Networking Services or Security
3. HCI/UXD
4. Software Architecture
"The Age of Big Data"

Courses:

• 1 Statistics (Regression**)
• 2 Analytics/Data Mining (intro, practicum)
• 1 Database Systems (intro to database)
• 2 Programming (cloud computing**)

(**these are advanced and have prerequisites that can be taken as part of the master’s degree)
Personal Care Science

Targeted towards personal care & cosmetic chemistry

There are 5 core courses and 3 electives.

2 mandatory:
- 16:137:570 Fundamentals of Personal Care Science (3) (Fall)
- 16:137:571 Product Development & Formulations for Personal Care Science (3) (Spring)

3 electives from the following list:
- 16:400:612 Introduction to Colloid and Interface Science (3)
- 16:400:515 Principles of Food Process Engineering I (3) or, 16:155:541 Pharmaceutical Materials Engineering (3)
- 16:682:501 Microbial Life (3) (Fall)
- 16:137:510 Drug Development from Concept to Market (3) (Fall)
- 16:720:523 Dermaceutics (3)
- 11:115:422 Biochemical Mechanisms of Toxicology (3)
- 16:160:509 Organic Chemistry of High Polymers (3)
- 16:137:582 Fundamentals of Regulatory Affairs (3) (Spring)
MBS Degree Requirements

Science Concentration
- 8 courses (24 credits) in the sciences
- Similar to a traditional science master’s courses
- Applied science & engineering fields

Business Curriculum
- Same across all of the science disciplines
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Other requirements
- Relevant work experience (internship)
- Lectures, events, networking
Business+ courses

- Principles of Finance & Accounting (3cr)
- Marketing (3cr)
- Communication & Leadership (3cr)
- Science & Technology Management Electives (6cr, can include project management, management of innovation, etc)
- Ethics & Professionalism (1cr)
- Capstone – business case, intrapreneurship, entrepreneurship (3cr)
- Colloquium in Science/Tech Management
- Internship opportunities: individual/team internship, innovation immersion, research experience
Professionally-Grounded Curriculum

• Choose your electives based upon your career goals
• We have established the minimum requirements so that you can be “literate” in your concentration area, but it is in the electives – in science & business - where your curriculum tells the story of what you want to achieve in pursuing a graduate degree.
Professionally-Grounded Curriculum

• Determine your 1-5 year plan
• Leadership & Communication class – interview leaders in your field & build up your networking
• Executive Coaching
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Other requirements
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- Lectures, events, networking
• Experiential Learning: classes include presentation, trips, etc
• Lecture Series
• Workshops & Networking Events
• Innovation & Discovery Events

PSM students visit the U.S. Patent Office Headquarters in Alexandria, VA on June 2014 for the Fundamentals of Intellectual Property class.
Distinguished Lecture Series

– CEOs of companies
– Inventors
– Innovators
– IAB members

Jonathan Barney, co-inventor of PatentRatings® system
Workshops & Networking

– Mock Interviews
– Dining & Social Etiquette
– Interviewing Techniques
– Branding Yourself
– Workplace Etiquette
– Lunch & Learn
– Holiday Party
– MBS Student Organization (Tailgate party, BBQ etc.)
Innovation & Discovery

– Entrepreneurship Day: entrepreneurs, venture capitalists, faculty, students and alumni
– Funding from a Panel of VCs
– Government Programs
– Business Plan Competitions
– Networking Opportunities
– Visits to NJ Start up Parks
– Internships
  • Posters/Presentations

• Keynote Speaker: Nov 14, Steve Wozniak – the man who created the world’s first personal computer and is the co-founder of Apple Computer, Inc.

MBS Student Shawn Chen and Steve Wozniak at Entrepreneurship Day, November 2011.
Internship & Work Experience

✓ Central component of our program

✓ Many Part time students

✓ Full time students: work on internships or careers

✓ International students

✓ Providing real time application . . .

Creating a valuable contributor to the Business
The Guidance

Industrial Affiliate / Board/ Council

- Curriculum Relevance
- Networking opportunities
- Workshop opportunities
- Internships & Careers
- Professional Perspectives
Online & Exec Ed

• Some of the courses are online (not full concentrations)
• UXD – is given in Exec Ed format & online
• Continuing Education courses can be counted as credit towards the MBS, e.g., RIE or CMD courses.
Pathways to Graduate Education

• Concentrations: UXD & Drug Discovery & Development

• Certificate ➔ Degree

• UXD – online/executive
Certificates

• Certificate in Computational and Data Enabled Science and Engineering (CDS&E)
  • Brings together core areas of science and engineering, computer science, and computational and applied mathematics in a concerted effort to use cyberinfrastructure (CI) for scientific discovery and engineering innovations.

• Certificate in Science & Technology Management:
  • Business curriculum of the MBS
  • Targeted towards Ph.D./Postdocs & professionals who only need the business component

• Certificate in Pharmaceutical and Clinical Trials Management
  • Regulatory affairs, preclinical & clinical drug development, management

• Certificate in Intellectual Property & Tech Transfer
  • Designed to introduce students to the essentials of Intellectual property and its strategies with emphasis on Technology Transfer
Applications

The application deadlines for the Master of Business and Science degree & Certificates are as follows:

**Fall**

*International Students*: May 1st  
*US/Permanent Resident Students*: June 1st  
BS/MBS Student Application: May 15

**Spring**

*International Students*: October 1st  
*US/Permanent Resident Students*: October 22nd  
BS/MBS Student Application: Oct. 15

**Summer**

*US Students*: March 1st
Admission Requirements to the MBS

• Science/engineering/Math/IT background (specific discipline dependent upon the concentration chosen)
• GRE
• GPA (major GPA 3.0)**
• 2 letters of recommendation
• Essay
• To apply: gradstudy.rutgers.edu
Additional Admission Requirements

• Drug Discovery & Engineering Management Concentrations → Work Experience is required – 1 year for domestic applicants, 2 years for international applicants. Coops and internships do not count.
Admission Requirements to 4 + 1

• Maintain a GPA of 3.2 or above in science/math major
• Submit an essay up to 500 words on your interest in the program and future career plans
• Complete 90 credits by the end of your sixth semester
• Submit a letter confirming your eligibility from your academic dean
• Submit a letter of recommendation from a professor in your major
International Opportunities

The MBS program is partnering with a number of leading international universities creating the first truly global professional science master’s program. The collaborations include student exchanges for joint degrees and academic activities, such as team taught courses, guest lecture series and visiting scholars programs.
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Student Organization

Connect with us on our social networks!

https://www.facebook.com/RutgersMBS
https://www.linkedin.com/in/rutgerspsm
https://twitter.com/Rutgers_PSM
The Master of Business & Science (MBS)

- Full Science master’s with rigorous business curriculum
- STEM degree
- Career Development & Executive Coaching
- Networking & Professional Events
- Professional Science courses
SCIENCE MEETS BUSINESS

mbs.rutgers.edu

For more information, please contact us at psminfo@dceo.rutgers.edu
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