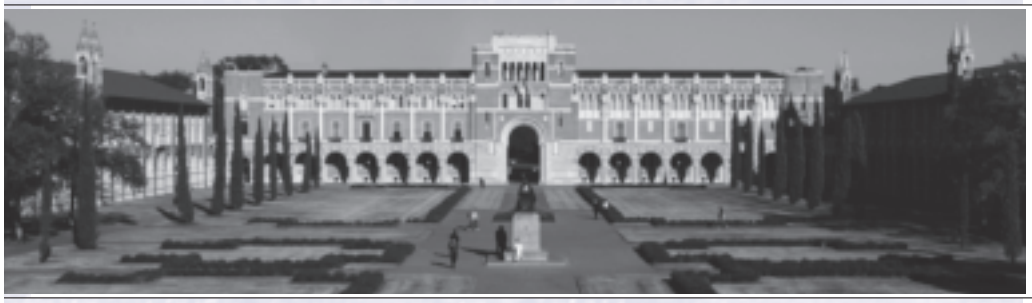

GRADUATE STUDY *at*

RICE

THE PROGRAM

The Wiess School of Natural Sciences offers professional master's degrees in the following four areas: Bioscience and Health Policy, Environmental Analysis, Subsurface Geoscience, and Space Studies. These degrees equip students with the skills needed to bridge the gaps between science, business, ,and government. Students are educated in the scientific approach to problems and are simultaneously trained in vital business concepts, policy issues, and communication skills.

Each degree track is composed of science courses, a set of cohort courses, and an internship. The cohort courses, required for students enrolled in all tracks, focus on business and communication skills and prepare students for work in a nonacademic environment. The required internship allows students to apply the knowledge and skills acquired at Rice while gaining valuable work experience in an industrial setting. This combination of an interdisciplinary curriculum and hands-on experience enables graduates to hit the ground running in a business environment.

Students in the Professional Science Master's program benefit from Rice's low student–faculty ratio and its collaborative culture that crosses disciplines and integrates teaching and research. Within the Wiess School of Natural Sciences are six departments, all with strong national reputations and excellent faculty. Wiess School faculty and staff members are active in their fields and professional societies and contribute significantly at national and international levels. Numbered among the faculty are a Nobel laureate, seven members of the National Academy of Sciences and numerous fellows of the American Association for the Advancement of Science and the American Academy of Arts and Sciences. In addition to studying under Wiess School professors, students will be exposed to management issues, policy, ethics, leadership, entrepreneurship, and communication curricula developed and taught by Rice professors in the George R. Brown School of Engineering, the Jesse H. Jones Graduate School of Business, the James A. Baker III Institute for Public Policy, and the Doerr Institute of New Leaders.

PROFESSIONAL SCIENCE MASTER'S FIFTH-YEAR DEGREE OPTION FOR RICE UNDERGRADUATES

Rice students have an option to achieve a Professional Master's Degree by adding a fifth year to the four undergraduate years of science studies. Advanced Rice students in good standing apply during their junior year, then start taking required core courses of the program during their senior year. A plan of study based on their particular focus area will need to be approved by the faculty advisor.

PSM/MBA COORDINATED DEGREE PROGRAM

In order to offer a deeper immersion into management and business acumen, the Professional Science Master's is collaborating with Rice's Jesse H. Jones Graduate School of Business to offer a double PSM/MBA degree program. According to the Professional Science Master's track chosen, graduates are qualified for leadership roles in industries related to the environment, nanotechnology, energy and government and finance.

SCIENCE COURSES

Each degree track includes a set of core science courses that provide students with the technical knowledge needed by industrial and governmental organizations. Students supplement these foundation courses by choosing electives in line with their areas of interest.

COHORT COURSES

Management for Science and Engineering

This course is designed to give students insights into how technology-oriented firms manage intellectual property, marketing, organizational behavior, strategy, accounting and finance.

PROFESSIONAL SCIENCE MASTER'S IN THE WIESS SCHOOL OF NATURAL SCIENCES

RICE UNIVERSITY

BIOSCIENCE AND HEALTH POLICY

ENVIRONMENTAL ANALYSIS

SUBSURFACE GEOSCIENCE

SPACE STUDIES

WWW.PROFMS.RICE.EDU

Science Policy and Ethics

This course provides students with a broader understanding of the ways that politics, policies and ethics interact with the world of business, science and technology. Topics include business ethics, ethics application, policy and politics, policy analysis, and public policies.

Professional Master's Seminar

This weekly seminar serves to provide exposure to local industry leaders from all program tracks and to generate a forum for students to present internship project results and receive communication training.

INTERNSHIPS

The required internship is a unique feature of the degrees from the Professional Science Master's Program. Students are required to complete a three- to six-month internship with a company, government agency or national laboratory. Students may choose any internship in line with their interests and area of study, provided it is approved by the track director. Assistance in identifying potential internships will be provided. Students also will benefit from Rice's close ties with local and national industry and from personal contact with business executives speaking at the Professional Master's Seminar.

At the conclusion of this internship, students must present a summary of their internship project(s) in both oral and written form as part of the Professional Master's Seminar. This serves as the culmination of each student's academic program in science and industry.

Rice recognizes that many students may have previous industrial experience in their area of study. In lieu of an internship, these students may choose an appropriate project for their final report. Part-time students who already work in their area of study may fulfill the internship requirement by working on a special project with their current employer. All projects require approval from the appropriate track director.

BOARD OF AFFILIATES

Industry has played an important role in all stages of the development of the Professional Science Master's (PSM) Program at Rice. The PSM Board of Affiliates consists of managers and/or entrepreneurs relevant to each of the industrial focus areas of the four program tracks who advise and guide program faculty on industry workforce needs and provides feedback on curriculum development. The members of the Board of Affiliates have national and international recognition in their fields and assist in identifying future directions and needs within each of the focus areas to keep the program updated and relevant.

MASTER'S DEGREE IN SUBSURFACE GEOSCIENCE

The professional master's degree in Subsurface Geoscience is designed for students who wish to become proficient in applying geological knowledge, geophysical methods and/or data management to finding and developing reserves of oil and natural gas.

The MSSG degree program offers three areas of specialization:

- **Energy Data Management:** prepares students to understand exploration and production as a data-driven business, to become data enabled geoscientists to match demands in the energy industry, or
- **Geology:** prepares students to be explorationists, with strong skills in using seismic and other geophysical methods along with geological principles to find oil and natural gas, or
- **Geophysics:** prepares students to become technical experts in aspects of exploration seismology.

M.S. IN SUBSURFACE GEOSCIENCE

Required professional courses (9 credits):

NSCI 501	Master Seminar (2 semesters required)
NSCI 501	Master Seminar (2 semesters required)
NSCI 511	Science Policy and Ethics
NSCI 512	Prof Master's Project
NSCI 610/ ENGI 610	Management for Science & Engineering

Required Core for all 3 Specializations (10 credit hours)

ESCI 558	3D Seismic Reflection Interpretation*
ESCI 436	Well Logging and Petrophysics
ESCI 615 **OR** ESCI 545	Decision Making and Economics in the Energy Industry / Hydrocarbon Systems Analysis

There are 3 focus areas in the Subsurface Geoscience Track: **Geology, Geophysics and Energy Data Management**

GEOLOGY FOCUS AREA

Required Core Courses: (6 credit hours)

ESCI 626 **OR** ESCI 663	Interpretation of Regional 2D Seismic Data* / Tectonic Systems
ESCI 627 **OR** ESCI 504 **OR** ESCI 516	Sequence Stratigraphy / Siliciclastic Depositional Systems / Topics on Carbonates

Geology Electives: Students must complete at least 15 credit hours from following electives:

ESCI 334 **OR** ESCI 516	Geological Techniques / Topics on Carbonates
ESCI 545	Hydrocarbon Systems Analysis
ESCI 626	Interpretation of Regional 2-D Seismic Data
ESCI 627	Sequence Stratigraphy
ESCI 642	Exploration Geophysics
ESCI 504	Siliciclastic Depositional Systems
ESCI 506	Carbonate Depositional Systems
ESCI 507	Applied Sedimentology II
ESCI 527	Seminar: Quantitative Petroleum Systems Analysis
ESCI 544	Hydrocarbon Exploration (AAPG Imperial Barrel competition)
ESCI 564	Seismic Reflection Data Processing
ESCI 652	GIS for Scientists and Engineers
ESCI 663	Structure and Evolution of Tectonic Systems
MGMT 609	Managing Energy Transitions
MGMT 610	Fundamentals of the Energy Industry

GEOPHYSICS FOCUS AREA

Required Core Courses: (6 credit hours)

ESCI 626	**OR**	Interpretation of Regional 2D Seismic Data*
ESCI 663		Tectonic Systems
ESCI 627	**OR**	Sequence Stratigraphy
ESCI 504	**OR**	Siliciclastic Depositional Systems
ESCI 516		Topics on Carbonates

Geophysics Electives: Students must complete at least 15 credit from following electives:

ESCI 564		Seismic Reflection Data Process
ESCI 640	**OR**	Geophysical Data Analysis: Digital Signal Processing
ESCI 641		Geophysical Data Analysis: Inverse Methods
ESCI 642		Exploration Geophysics
ESCI 334		Geological Techniques
ESCI 504		Siliciclastic Depositional Systems
ESCI 506		Carbonate Depositional Systems
ESCI 545		Hydrocarbon Systems Analysis
ESCI 544		Hydrocarbon Exploration
ESCI 663		Structure and Evolution of Tectonic Systems
ESCI 627		Sequence Stratigraphy
ESCI 652		GIS for Scientists and Engineers
MGMT 609		Managing Energy Transitions
MGMT 610		Fundamentals of the Energy Industry

ENERGY DATA MANAGEMENT FOCUS AREA

Required Core Courses: (15 credit hours)

COOMP 330	**OR**	Tools and Models for Data Science
COMP 430		Introduction to Database Systems
CAAM 620		Topics in Computational Science
ESCI 549		Energy Data Management
ESCI 564		Seismic Data Processing *
ESCI 530	**OR**	Data Science for Environmental and Geoscience Applications
ESCI 558		3-D Seismic Data

Energy Data Management Electives: Students must complete at least 6 credit hours from the following electives:

ESCI 652	GIS for Scientists and Engineers
MGMT 609	Managing Energy Transitions
MGMT 610	Fundamentals of the Energy Industry
CAAM 378	Introduction to Operations Research and Optimization
CEVE 528	Engineering Economics
COMP 556	Introduction to Computer Networks
ECON 601	Energy Economics
MGMT 661	International Business Law
MGMT 670	Operations Strategy
MGMT 676	Social Enterprise
STAT 518	Probability
GLBL 543	Energy Policy
MGMT 611	Geopolitics of Energy

*Prequisite or co-requisite: ESCI 442/642 Exploration Geophysics

Substitutions for required elective courses may be approved by the Track Advisors.

Internship
A three- to six-month internship under the guidance of a host company, government agency or national laboratory is required. At the conclusion of this internship, students must present their internship project in both oral and written forms as part of the Professional Master's Project.

TOTAL REQUIRED CREDIT HOURS: 40 credits

The core requirements for the degree include courses in geophysical and geological exploration methods, data management, business and policy, a well as an industrial internship or work experience. Students select a group of elective courses from focus areas such as: geology, geophysics and energy data management. The geology focus area prepares students to be "explorationists", with strong skills in using seismic and other geophysical methods along with geological principles to find oil and gas. The geophysics focus area prepares students to become technical experts in aspects of exploration seismology. The energy data management focus helps students to become data-enabled geoscientists to meet demand in the industry.

This interdisciplinary curriculum include courses taught by faculty from the earth science, statistics, computer science, computational/applied mathematics and economics departments as well as from the Jones School of Business, and evening classes team-taught by industry leaders.

THE FACULTY AND THEIR RESEARCH

Vitor Abreu. Adjunct Professor. Ph.D., Rice University. Senior Exploration Geologist, ExxonMobil Exploration Company. Sequence stratigraphy, evolution of passive margins and deep-water reservoirs.

Gerald R. Dickens. Professor. Ph.D., University of Michigan, 1996. Paleoceanography, marine geology and low-temperature geochemistry.

André W. Droxler. Professor, CSES Director, Ph.D., University of Miami, 1984. Carbonate sedimentology with emphasis on periplatform carbonate ooze.

Melodie E. French. Assistant Professor, Ph.D., Texas A&M, 2014. geophysics.

Cin-Ty A. Lee. Professor, Department Chair Earth, Environmental & Planetary Sciences, Ph.D., Harvard University, 2001. Physical, chemical processes of planetary differentiation with emphasis on origin/evolution of Earth's curst and mantle.

Alan R. Levander. Professor. Ph.D., Stanford University, 1984. Lithospheric seismology and wave propagation.

Carrie Masiello. Professor. Ph.D., University of California–Irvine, 1999. Carbon cycling, carbon sequestration, climate change, black carbon, terrestrial–river–ocean biosphere interactions.

Julia Morgan. Professor. Ph.D., Cornell University, 1993. Marine geology, neotectonics and structural geology.

Jeff Nittrouer. Assistant Professor, Ph.D. University of Texas, 2010. Geomorphology, sedimentology, stratigraphy, basin analysis, coastal systems.

Fenglin Niu. Professor. Ph.D., University of Tokyo, 1997. Global seismology, seismic structure of the earth's deep interior.

Peter Rossky. Dean of Wiess School of Natural Sciences. Ph.D., Harvard University, 1978. Theoretical chemistry, computer simulation, solvent effects on chemical reactions, condensed phase quantum dynamics, photochemistry.

Colin A. Zelt. Professor. Ph.D., University of British Columbia, 1989. Seismology and inverse methods.

ADJUNCT FACULTY AND LECTURERS

Kenneth Abdulah, Vitor Abreau, Kevin Biddle, Gary Gray, Malcolm Ross, Kurt Rudolph and Lori Summa

MASTER'S DEGREE IN ENVIRONMENTAL ANALYSIS

The Environmental Analysis track will teach students rigorous methods that are needed by industrial and governmental organizations to deal with environmental issues. In addition to track courses, students will take a management course, a policy and ethics course and a seminar jointly with the students involved in the other tracks.

To ensure that all students obtain an excellent quantitative background, each student will be required to take a set of core courses. If a student can demonstrate that he or she has learned the material elsewhere, he or she may be exempted. In addition to completing the core courses, the student will choose electives.

THE FACULTY AND THEIR RESEARCH

Janet Braam. Professor, Chair of the Department of Biosciences. Ph.D., Cornell Graduate School of Medical Sciences, 1985. Regulation and functions of genes encoding calmodulin-related proteins and cell wall modifying enzymes of plants. Control of gene expression in response to environmental stimuli. Calcium and nitric oxide signaling. Autophagy regulation.

Pedro Alvarez. Professor, Chair of the Department of Civil and Environmental Engineering. Ph.D., University of Michigan. Biological processes in natural and engineered systems.

Phil Bedient. Professor. Ph.D., University of Florida, 1975. Surface and groundwater hydrology, geographical information and decision support systems, flood control and water quality strategies, modeling, contaminant transport mechanisms in groundwater, aquifer remediation strategies and modeling.

Jim Blackburn. Professor in the Practice of Environmental Law. Sustainable development, air pollution control strategy, and nonstructured flood control.

Susan Cates. Assistant Chair, Ph.D., Rice University, 2000. Crystallographic and computational research on parvalbumin.

Daniel Cohan. Associate Professor. Ph.D., Georgia Institute of Technology, Atlanta, GA, 2004. Photochemical modeling, atmospheric sensitivity analysis, pollutant impacts on human health and vegetation, and environmental policy and management.

Scott Egan. Assistant Professor, Ph.D., Vanderbilt University, 2010. Environmental diagnostics, evolution, speciation, population genetics and genomics.

Qilin Li. Professor. Ph.D., University of Illinois at Urbana-Champaign, 2002. Advanced treatment technologies for water quality control, membrane processes, colloids and interface science, and environmental impact of nanomaterials.

Loren Raun. Faculty Fellow. Ph.D. Rice University, 1998. Environmental statistics, human health risk assessment (including stochastic), air, soil and ground water pollution fate and transport.

Peter Rossky. Dean of Wiess School of Natural Sciences. Ph.D., Harvard University, 1978. Theoretical chemistry, computer simulation, solvent effects on chemical reactions, condensed phase quantum dynamics, photochemistry.

Evan H. Siemann. Professor. Ph.D., University of Minnesota, 1997. Population and community ecology, forests, grasslands, plant ecology, insect ecology, plant/herbivore interactions, biodiversity and conservation biology.

M.S. IN ENVIRONMENTAL ANALYSIS

Required Science Core Courses
EBIO 570 Ecosystem Management and Conservation (S)
CEVE 501 Chemistry for Environmental Engineering and Science (F)
or
CEVE 510 Principles of Environmental Engineering (F)
STAT 685 Environmenta Statistics and Decision Making

Required Cohort Courses
NSCI 501 Master's Seminar (two semesters required) (F, S)
NSCI 511 Science Policy and Ethics (S)
NSCI 512 Professional Master's Project
NSCI 610 Management in Science and Engineering

Elective Courses
Students will choose 21 credit hours elective courses from the following three focus areas and satisfying the following requirements:

one course (3 credits) from each of EBIO, CEVE and STAT,
one course (3 credits) from the Management and Policy focus area,
and three courses (9 credits) from one focus area.

Recommended courses include, but are not limited to, the following:

Environmental Sustainability

CEVE 501	Chemistry for Environmental Engineering and Science
CEVE 502	Sustainable Design (F)
CEVE 507	Energy and the Environment (S)
CEVE 508	Introduction to Air Pollution Control
CEVE 509	Hydrology and Water Resources (S)
CEVE 511	Atmospheric Processes (F)
CEVE 512	Advanced Hydrology and Hydraulics (S)
CEVE 520	Environmental Remediation and Restoration (F)
CEVE 534	Fate and Transport of Contaminants in the Environment (F)
CEVE 536	Environmental Biotechnology and Bioremediation (S)
CEVE 550	Environmental Organic Chemistry (S)
EBIO 329	Animal Biology and Physiology
EBIO 336	Plant Diversity
EBIO 523	Conservation Biology (F) + EBIO 524 Lab
EBIO 524	Conservation Biology Lab
EBIO 525	Ecology (F)
EBIO 540	Global Biochemical Cycles
EBIO 560	Environmental Impact Statements and Permitting
EBIO 563	Topics in Biological Diversity (F)
EBIO 566	Applied Phycology
EBIO 568	Current topics in Conservation Biology (S)
EBIO 569	Core course in Ecology and Evolutionary Biology (F)
EBIO 579	Aquatic Ecology with Scuba
EBIO 580	Sustainability Developments and Reporting (F)
ESCI 618	Quantitative Hydrogeology
ESCI 650	Remote Sensing (S)
ESCI 652	GIS for Scientists
STAT 684	Environmental Risk Assessment and Human Health (F)
GLHT 411	Integrated Approach to Sustainability (S)

Management and Policy

CEVE 528	Engineering Economics (S)
CEVE 529	Engineering Leadership and Ethics
ESCI 617	Petroleum Economics and Management
ECON 437	Energy Economics (F)
ECON 580	Environmental Economics (F)
GLBL 543	Energy Policy
MGMT 609	Managing Energy Transitions (S)
MGMT 610	Fundamentals of the Energy Industry (F)
MGMT 661	International Business Law (S)
MGMT 670	Operations Strategy (F)
MGMT 676	Social Enterprise (F)
MGMT 721	General Business Law

Quantitative Decision-Making

CEVE 313	Uncertainty and Risk in Urban Infrastructures (S)
CEVE 528	Engineering Economics (S)
ECON 580	Environmental Economics (F)
STAT 553	Biostatistics (S)
STAT 605	R for Data Science (F)
STAT 606	SAS Statistical Programming
STAT 615	Regression and Linear Models (F)
STAT 684	Environmental Risk Assessment and Human Health (F)
ESCI 652	GIS for Scientists

Other courses can be submitted for approval by the faculty advisor.

TOTAL REQUIRED CREDIT HOURS: 39 hours

MASTER'S DEGREE IN BIOSCIENCE AND HEALTH POLICY

The Bioscience and Health Policy track will give students a deep background in science complemented by courses in business, economics, humanities and policy studies to foster their understanding of the role of science in policy making and the role of public policy in science. Their coursework provides study skills enabling students to develop specific policy recommendations. Students also receive the tool-set to become knowledgeable in the formulation and execution of public policy. In addition to track courses, students take an overview course in Science and Policy and Ethics, management courses, and a seminar jointly with the students involved in the other tracks.

Direct access to the Baker Institute for Public Policy allows students to work closely with policy scholars as well as meet with many of the leaders in science and technology policy, healthcare management and business.

This program focuses on training healthcare professionals and health policy analysts, providing them with the tools to face the complex challenges inherent in the US bioscience research, public health, healthcare systems, and health-related industry.

THE FACULTY AND THEIR RESEARCH

Janet Braam. Professor, Chair of the Department of Biosciences. Ph.D., Cornell Graduate School of Medical Sciences, 1985. Regulation and functions of genes encoding calmodulin-related proteins and cell wall modifying enzymes of plants. Control of gene expression in response to environmental stimuli. Calcium and nitric oxide signaling. Autophagy regulation.

Andrew R. Barron. Professor. Ph.D., Imperial College of Science and Technology, University of London, 1986. Applications of inorganic chemistry to materials science of aluminum, gallium and indium.

George Bennett. Professor. Ph.D., Purdue University, 1968. Genetic engineering of metabolic pathways of microbes for production of biofuels and chemicals. Molecular biology of prokaryotes.

M.S. IN BIOSCIENCE AND HEALTH POLICY

Four Required Bioscience Classes:
The bioscience courses give indepth instruction in specialized areas of Bioscience. Four courses are required to obtain a broad understanding of diverse areas of cutting edge bioscience research.

BIOC 524	Microbiology and Biotechnology (S)
BIOC 525	Plant Molecular Genetics and Development (F)
BIOC 540	Metabolic Engineering
BIOC 544	Developmental Biology (S)
BIOC 545	Advanced Molecular Biology and Genetics (F)
BIOC 547	Biology and Medicine (S)
BIOC 550	Viruses and Infectious Diseases
BIOC 555	Computational Synthetic Biology
BIOC 560	Cancer Biology (S)
BIOC 570	Computation with Biological Data
BIOC 573	Immunology (S/F)
BIOC 580	Protein Engineering
BIOC 585	Fundamentals of Cellular, Molecular, and Integrative Neuroscience (F)
EBIO 523	Conservation Biology
EBIO 524	Conservation Biology Lab
EBIO 525	Ecology
EBIO 540	Global Biogeochemical Cycles

Required Cohort Courses:
NSCI 501 Master's Seminar (two semesters required) (S/F)
NSCI 511 Science and Technology Policy (S)
NSCI 512 Professional Master's Project (S)
NSCI 610 Management in Science and Engineering (S/F)

Four Statistics, Economics, and Policy Courses:
The analytical competency requirement provides career-enhancing, marketable skills in policy analysis, economics and statistics. Students will take courses from groups A, B and C as indicated below:

A – One Statistics/Data Analytics Course: (3 credit hours)

BIOE 552	Intro Computational Systems Biology
ESCI 654	Geographic Information Science
STAT 305	Introduction to Statistics in Biosciences
STAT 385	Methods of Data Analysis
STAT 553	Biostatistics
STAT 605	R for Data Science
STAT 684	Environmental Risk Assessment and Human Health

B – One Economics Course: (3 credit hours)

ECON 450	Economic Development
MGMT 631	Health Insurance in the US: The Essentials
MGMT 673	Cost Analysis in Health Care
MGMT 678	U.S. Healthcare Management
MGMT 679	Cost and Quality in Health Care
MGMT 690	Healthcare Strategy
MGMT 750	Strategic Considerations in Health Informatics
MGMT 751	Economics of Healthcare Sectors
PH 3910*	Introduction to Health Economics

C – Two Policy Courses: (6 credit hours)

ANTH 581	Medical Anthropology
ANTH 643	Race, Ethnicity and Health
NSCI 530	Shaping of Health Policy
HEAL 580	Disparities in Health in America
MGMT 631	Health Insurance in the US: The Essentials
MGMT 690	Healthcare Strategy
MGMT 691	Negotiations for Healthcare
MGMT 694	Interpersonal Communication in Healthcare
SOCI 525	Population Health Seminar

Required Internship:
A three- to six-month internship with a company, government agency or national laboratory. At the conclusion of this internship, students must present their internship project in both oral and written form as part of the Professional Master's Project.

Two Elective Courses: (6 credit hours)
The electives reflect individual academic interests and career goals. Any course from the above list of Bioscience courses can be taken as an elective, provided it was not taken as a required course. In addition, the following classes qualify as elective classes:

ENGI 515	Leading Teams and Innovation
ENGI 529	Ethics and Engineering Leadership
ENGI 614	Learning How to Innovate
ENGI 615	Leadership Coaching for Engineers
HEAL 507	Epidemiology
HEAL 560	Planning and Evaluation of Health Promotion and Education
HURC 506	Health and Humanities Master Class
MGMT 623	Commercialization in Pharma/Biotech
MGMT 633	Life Science Entrepreneurship
MGMT 712	Process Management and Quality Improvement
MGMT 738	Customer Focus in Healthcare and Service Industries: A Stategic Approach
MGMT 961	Business Law
PHIL 336	Topics in Medical Ethics

Other courses can be submitted for approval by the faculty advisor.

Note: Each course may not be offered every year, and some courses may have pre-requisites or require instructor permission. Students can also choose electives from courses offered at UT Graduate School of Biomedical Sciences (GS) and UT School of Biomedical Informatics, UT School of Public Health, (PH) and UT Health Science Center, (HI) as listed above.

TOTAL REQUIRED CREDIT HOURS: 39 hours

Susan Cates. Assistant Chair, Ph.D., Rice University, 2000. crystallographic and computational research on parvalbumin.

Kathleen Matthews. Professor. Ph.D., University of California, Berkeley, 1970. Structure and function of genetic regulatory proteins.

Kirstin Matthews. Fellow in Science and Technology Policy at Rice University's Baker Institute for Public Policy. Ph.D., The University of Texas Health Science Center at Houston, 2003. Research on intersection between traditional biomedical research and public policy.

Peter Rossky. Dean of Wiess School of Natural Sciences. Ph.D., Harvard University, 1978. Theoretical chemistry, computer simulation, solvent effects on chemical reactions, condensed phase quantum dynamics, photochemistry.

Daniel Wagner. Associate Professor. The University of Texas Health Science Center, 1997. Developmental biology, genetic regulation of vertebrate development.

MASTER'S DEGREE IN SPACE STUDIES

The Space Studies track is geared to help individuals increase their knowledge of space engineering, science, program management and policy. The program includes advanced engineering, biological and physical science classes and introduces students to economics, public policy, and management disciplines, which impact space commercialization and national policy. This program focuses on training scientists and engineers interested in program management providing them with the tools to face the complex challenges inherent in US space policy, human and robotic space exploration, and the role of science in space exploration and technology development.

THE FACULTY AND THEIR RESEARCH

David Alexander. Director, Rice Space Institute, Professor, Professor. Ph.D. University of Glasgow, UK., 1988. Physics and Astronomy; Solar activity, sunspots, flares and coronal mass ejections.

M.S. IN SPACE STUDIES

Cohort Courses: (9 credit hours)

NSCI 501	Professional Master's Seminar (F/S)
NSCI 502	Space Studies Seminar (S)
NSCI 511	Science Policy and Ethics (S)
NSCI 512	Internship Project Report/Presentation
NSCI 610	Management for Science and Engineering (F/S)

Required Core Science/Engineering Courses: (15 credit hours)

ASTR 570	Solar System Physics (F)
MECH 572	Aerospace Systems Engineering (S)
STAT 605	R for Data Science (F)

With two courses (6 credit hours) to be chosen from the list below:

ASTR 554	Astrophysics of the Sun (S)
BIOC 415	Experimental Physiology (S)
BIOC 540	Metabolic Engineering (F)
ESCI 540	Earth's Atmophere (F)
ESCI 660	Geological and Geophysical Fluid Dynamics (F)
MECH 554	Computational Fluid Mechanics (F)
MECH 592	Aerospace Environments

Two Statistics/Computation Courses: (6 credit hours)

The analytical competency requirement provides career-enhancing, marketable skills in finance, economics and computation. Students can choose courses as follows:

Choose two courses from:

CAAM 453	Numerical Analysis I
CEVE 528	Engineering Economics (S)
ESCI 650	Remote Sensing
MECH 554	Computational Fluid Mechanics (F)
PHYS 416	Computational Physics (S)
STAT 502	Neural Machine Learning I
STAT 541	Multivariate Analysis
STAT 640	Data Mining and Statistical Learning

Depending on background, other courses can be chosen.

3 Electives according to student's interest: (9 credit hours)
These course electives reflect individual academic interests and career goals.

Focus: Engineering

CEVE 504	Atmospheric Particular Matter (S)
CEVE 505	Eng. Project Development& Management (F)
CEVE 511	Atmospheric Processes (F)
CEVE 576	Structural Dynamics and Control (S)
ENGI 515	Leading Teams in Innovation
ENGI 614	Learning How to Innovate (F)
MECH 454	Computational Fluid Mechanics (F)
MECH 498	Intro to Robotics (S)
MECH 572	Aerospace Systems Engineering
MECH 591	Gas Dynamics (S)
MECH 592	Aerospace Environments
MECH 594	Intro to Aeronautics
MECH 596	Flight Mechanics

and others …

Focus: Sciences (Astro Science/Earth Science/Life Sciences)

ASTR 542	Nebular Astrophysics
ASTR 554	Astrophysics of the Sun (S)
ASTR 555	Protostars and Planets (S)
ASTR 565	Compact Objects (S)
BIOC 524	Microbiology and Biotechnology
BIOC 540	Metabolic Engineering
BIOC 544	Developmental Biology
BIOC 545	Advanced Molecular Biology and Genetics
BIOC 570	Computational with Biological Data
BIOC 580	Protein Engineering
ESCI 667	Geomechanics
ESCI 672	Numerical Methods Earth Systems
ESCI 540	Earth's Atmosphere
ESCI 581	Topics in Planetary Dynamics
ENGI 515	Leading Teams in Innovation
ENGI 614	Learning How to Innovate
MGMT 633	Life Science Entrepreneurship

and others …

NOTE: *FOCUS AREAS IN EARTH SCIENCE, PHYSICS AND LIFE SCIENCES*
can be chosen - depending on student's background. Students will consult with academic advisor about appropriate selection of their elective science courses.

Focus: Management and Entrepreneurship

ENGI 515	Leading Teams in Innovation
ENGI 614	Learning How to Innovate (F)
MGMT 601	Financial Statement Analysis (F)
MGMT 618	Complexities of People and Organizations (F)
MGMT 619	Corporate Governance (S)
MGMT 629	Business Plan Development (F)
MGMT 633	Life Science Entrepreneurship
MGMT 658	Applied Risk Management (S)
MGMT 734	Technology Entrepreneurship

and others …

A 3 – 6 months internship: Practical experience is offered via a 3 – 6 month work immersion. The internship will be under the guidance of a host company, government agency, or non-profit organization. A summary of the internship project is required in both oral and written form as part of the Professional Master's Seminar.

Other courses can be submitted for approval by the faculty advisor.

TOTAL REQUIRED CREDIT HOURS: 39 hours

Andrew Meade. Professor and Chair, Department of Mechanical Engineering, Ph.D. University of California. George R. Brown School of Engineering. Experimental and numerical aerodynamics.

Erzsebet Merenyi. Professor , Departments of Statistics and Electrical and Computer Engineering. Ph.D. Szeged University, Hungary, 1980. Neural computation, machine learning, self-organized learning, manifold learning.

Stephen Bradshaw. Assistant Professor, Ph.D. Aberystwyth University, Wales, UK 2000. William V. Vietti Junior Chair of Space Physics; Heating in the solar atmosphere; energy transport processes; time-dependent ionization states; emission line spectroscopy. Electron and ion kinetics; non-equilibrium processes; non-local phenomena; hybrid fluid-kinetic models. Numerical modeling.

Christopher Michael Johns-Krull. Professor. Ph.D. UC Berkeley 1994. Physics and Astronomy. Astrophysics of lower mass stars, including the sun.

Ramon Gonzalez. Professor, Chemical Engineering, and Chemical and Biomolecular Engineering. Ph.D. University of Chile, 2001. Metabolic Engineering , Functional Genomics: Transcriptomics, Proteomics, Metabolomics, and Fluxomics; Systems Biology; Microbial Fermentations.

Adrian Lenardic. Professor Earth Science. Ph.D. University of California at Los Angeles, 1995. Geodynamical modeling applied to problems of coupled mantle flow, heat loss, and tectonics.

Peter Rossky. Dean of Wiess School of Natural Sciences. Ph.D., Harvard University, 1978. Theoretical chemistry, computer simulation, solvent effects on chemical reactions, condensed phase quantum dynamics, photochemistry.

Tayfun Tezduyar. James F. Barbour Professor Mechanical Engineering, Ph.D. Caltech, 1982. Advanced Flow simulation and modeling.

Hadley Wickham. Adjunct Associate Professor, Dobelman Family Junior Chair. Ph.D. Iowa State University 2008. Statistics. Statistical computing, focused heavily on statistical graphics

Frank R.Toffoletto. Professor. Ph.D. Rice University. 1987. Physics and Astronomy. Magnetospheric Physics, Numerical Simulations.

Marcia O'Malley. Professor, Ph.D. Vanderbilt University, 2001. Mechanical Engineering and Materials science. Modeling, design, and control of haptic interfaces; Modeling, design, and control of telemanipulation and human augmentation systems; Study of human-robot interactions.

COURSE AVAILABILITY

Courses listed in this brochure don't reflect all courses available every year. Students are requested to consult with their academic advisors before enrolling.

ADMISSION

Admission requirements for the Professional Master's Program degrees will vary with each track. All students must have a science engineering bachelor's degree and submit general GRE scores, official transcripts, letters of recommendation and a completed application. Contact the program director or visit the program Website at www.profms.rice.edu for specific admission information.

TUITION

Most students require three full semesters of courses to complete the Professional Master's Program. Graduate tuition for academic year 2018–19 is $19,000 per semester. The student does not pay tuition during the internship period, but may need to pay a small fee to continue full-time student status. Although Rice does not offer financial assistance for these degrees, most U.S. citizens and permanent residents are eligible for federal student loans and work-study programs. Sources of additional financial assistance can be found at www.profms.rice.edu.

ABOUT RICE AND HOUSTON

Rice is a leading American research university — small, private and highly selective — distinguished by a collaborative, interdisciplinary culture, and a global perspective. Only a few miles from downtown Houston, it occupies an architecturally distinctive, 285-acre campus shaded by nearly 4,000 trees. State-of-the-art facilities and laboratories, internationally renowned centers and institutes, and one of the country's largest endowments support an ideal learning and living environment.

The university attracts a diverse group of highly talented students and faculty with outstanding graduate and professional programs in the humanities, social sciences, natural sciences, engineering, architecture, music, and business. With just 3,000 graduate students and 4,000 undergraduates, Rice offers an unusual opportunity to forge close relationships with eminent faculty scholars and researchers and the option to tailor graduate programs to specific interests.

Houston offers all the expected educational, cultural and commercial advantages of a large urban center, and more. It's home of the Texas Medical Center, the largest concentration of medical schools, hospitals and research facilities in the world, as well as several other universities. Rice has cooperative programs with the University of Houston, Baylor College of Medicine, the University of Texas Health Science Center, and Texas Southern University. Houston is one of the few U.S. cities with resident companies in all four major performing arts: drama, ballet, opera, and symphony. It also boasts a museum district featuring exhibits of national and international prominence.

As urban as it is, Houston also is a surprisingly green city. Houstonians enjoy the outdoors in more than 300 municipal parks and 120 open spaces with 160 miles of bike paths, and many frequent the beach at Galveston Island, only a 45-minute drive away. Other short trips include Austin, the state's capital, and historic San Antonio, less than three hours away.

FOR MORE INFORMATION

To receive more information about the Professional Master's Program:

Contact:
Dagmar K. Beck
Director, Professional Science Master's Program
713-348-3188
profms@rice.edu

or

Lindsey Hodge
Program Administrator
713-348-2372

Dean of the Wiess School of Natural Sciences
Peter Rossky: 713-348-3350

Or fax: 713-348-3121

Or write to:
Rice University
Professional Science Master's Program
Wiess School of Natural Sciences–MS 103
P.O. Box 1892
Houston, Texas 77251-1892

Or visit the program Web site: www.profms.rice.edu

FOR ADDITIONAL INFORMATION:

Rice University homepage:
www.rice.edu
Rice University Office of Graduate and Postdoctoral Studies homepage:
graduate.rice.edu
Graduate Student Association homepage:
gsa.rice.edu
City of Houston homepage:
www.houstontx.gov
Houston information from the *Houston Chronicle:*
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Houston information from the Greater Houston Partnership:
www.houston.org
Houston information from Citysearch:
houston.citysearch.com

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