



RICE NATURAL SCIENCES

Professional Science Master's Program

Professional Science Master's Wiess School of Natural Sciences

Graduate Degree Requirements and Procedures

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www.profms.rice.edu

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Consult the Rice University General Announcements on-line at

PROGRAM OVERVIEW

The Wiess School of Natural Sciences offers five degrees through the Professional Science Master's Program.

The Master of Science in Applied Chemical Sciences provides skills needed for work in government agencies, biotechnology units, chemical agencies, labs, chemical manufacturing units, oil industry, petroleum sector, pharmaceutical sector, heavy chemical firms and more.

The Master of Science in Bioscience and Health Policy provides skills needed for work in bio scientific, health-related industries and governmental organizations. It aims to build leaders in science and health policy who will create, promote, and integrate science, medicine and practice.

The Master of Science in Environmental Analysis focuses on the methods needed by industrial and governmental organizations to deal with environmental issues.

The Master of Science in Energy Geoscience is geared for students who would like to become proficient in applying geological knowledge, geophysical methods and/or data management to finding, managing and developing reserves of oil and natural gas.

The Master of Science in Space Studies combines study of space engineering, aerospace, and life sciences, with courses in management, business and communication. It will train scientists/engineers to face challenges in human/robotic space exploration and space policy.

The curriculum for all professional science master's degrees consists of required science courses, electives, cohort courses, and a three-to-six-month internship. This combination should enable the student to apply her/his scientific education in an industry environment.

GENERAL DEGREE REQUIREMENTS

Each degree consists of science core courses, cohort courses, elective courses, and a three-to-six month internship, practical work experience, capstone project, or research experience. Students must complete two reports on the internship/project experience and give a presentation during the Professional Master's Seminar.

Professional Science Master's students must take approximately 39 semester hours of upper-level courses (30 credit hours have to be at the 500-level or higher); the total hours depend upon the chosen degree and courses selected. At least 24 semester hours must be completed at Rice. Students who have already taken courses substantially like any of the required courses (and have not used them for another degree) may request to transfer up to 6 credit hours from a former institution. This process requires that students submit a memo and copies of all relevant transcripts and course syllabi to the program committee. Each case must be individually approved by the program committee.

Students must maintain a B- (2.67) grade point average in courses counted toward the graduate degree. Students whose GPA falls below 2.67 are placed on probationary status. Students on probationary status will not be approved for an intern position or graduation.

The general timeline for these degrees is three semesters of study to complete the required coursework, plus a three-to-six-month internship/work experience/capstone project/ or research experience. Full-time students should be able to finish the degree in two years, and part time students usually finish within 3 to 4 years. The university allows a maximum of five years to complete a master's degree.

Students develop a study plan before entering the program that details the course work they are planning to pursue during their studies at Rice. The study plan is reviewed by advising faculty and adjusted over time to adapt to any changes in course offerings and career goals of students.

5th Year Degree Option for Rice Undergraduates

Rice students have an option to pursue a Professional Science Master's degree back-to-back with the bachelor's degree by adding just one more year of graduate studies to the four undergraduate years of science studies. Advanced Rice students in good standing apply during their junior year and then start taking required core courses of the respective program during their senior year in addition to finalizing their undergraduate requirements. Note that a specific course completed can be counted toward only one degree. Once all requirements for the undergraduate degree are completed, the student will matriculate into the master's degree program. A plan of study based on their specific focus area will need to be approved by the faculty program director and the PSM director. Students should be aware that there could be financial aid implications if the conversion of undergraduate coursework to that of graduate-level reduces their earned undergraduate credit for any semester below that of full-time (12 hours) status.

Visit the General Announcements for more detailed information:

<https://ga.rice.edu/undergraduate-students/academic-opportunities/undergraduate-graduate-concurrent-enrollment/>

The Coordinated PSM/MBA Program Option

To offer a deeper immersion into management and business acumen, the Professional Science Master's Program at Rice has collaborated with the Rice Jones Graduate School of Business to offer an integrated PSM/MBA study option. Applications to both programs must be received at the same time. According to the Professional Science Master's track focus, graduates are qualified for leadership roles in industries related to the environment, nanotechnology, energy, and government.

This coordinated degree program can be completed in 2 1/2 to 3 years. This dual degree includes a total of 45 hours of course work in business management and 30 credit hours in the chosen PSM program. Students will complete the same core requirements as the students in the regular MBA and PSM programs. Successful graduates from both degree programs will receive a Master of Science and an MBA degree.

Admission Requirements

To enter this coordinated degree program, applicants must apply and be accepted by both the Jones School of Business (JGSB) and one of the following Weiss School of Natural Sciences Professional Science Master's (PSM) programs: Bioscience and Health Policy, Environmental Analysis, Energy Geoscience, or Space Studies. The program requires the JGSB application, two letters of recommendation, and the GRE.

Degree Requirements

Students may earn a Master of Science degree from the Weiss School of Natural Sciences' Professional Science Master's program in the following fields: (1) Bioscience and Health Policy, (2) Environmental Analysis, (3) Energy Geoscience, or (4) Space Studies. Ordinarily, both the PSM and the MBA each take two academic years to complete. Coordinated degree candidates are required to fulfill a minimum of 5 full time, consecutive semesters (2.5 academic years). In rare cases, a sixth semester may be necessary; however, the standard progression is as follows and students must maintain the academic pace set out by their coordinated degree plan:

- PSM: a minimum of two consecutive full-time semesters
- MBA: a minimum of three consecutive full-time semesters

For the coordinated MBA/Master of Science degree from the Professional Master's program, students must fulfill the following minimum requirements

- Complete 75 credit hours of course work including at least 30 credits in a science discipline and 45 credits of business course work
- Satisfy all MBA core curriculum requirements
- Satisfy all Professional Masters MS program-specific requirements
- Meet with the Coordinated-Degree Advisory Team each semester for academic advising and progress review
- Complete required summer internships
- Fulfill all requirements within a maximum of three full-time academic years

At the MBA and PSM discretion, a standard maximum of 6 credit hours of pre-degree-entry coursework may be transferred into the coordinated-degree. Students are not permitted, however, to take any MBA core courses prior to their official entry into the program.

Special circumstances (e.g., medical condition, familial obligation, et al.) can arise during a student's academic career, which may require a temporary halt to academic pursuits (leave of absence or temporary withdrawal). In such cases, students are required to submit a written appeal with supporting documentation (if applicable) requesting a leave of absence or temporary withdrawal. If jointly approved, a revised degree plan will be developed upon the student's return to the program. In the case of an approved academic leave of absence or temporary withdrawal, reenrollment must occur within three academic years from departure, and students are still expected to graduate with the coordinated degree within a maximum of five to six full time semesters.

Program Cost Structure

The following is the standard tuition structure:

- PSM: a minimum of two consecutive (Fall, Spring) semesters
- MBA: a minimum of three consecutive (Fall, Spring, Fall) semesters.

In rare cases a student may extend the program an additional sixth semester. The cost will be treated as follows:

- If a student enrolls in only PSM courses, then that semester's tuition will be the PSM rate.
- If a student enrolls in an MBA or a combination of MBA/PSM courses, then that semester's tuition will be the MBA rate.

Scholarship funding may be awarded to a coordinated-degree student by one or both programs. In the case of MBA scholarships, funding eligibility is merit-based and determined at the point of admission into the program. In the case of PSM scholarships, funding may be awarded at the point of admission into the program or to current students. This funding is merit-based and determined through a holistic review of the quality of the application or the academic excellence of the current student. A scholarship given by a program is only available to the student during those semesters that the student is billed for that program's tuition (Example: An MBA scholarship is only available during the semesters MBA tuition is billed).

Due to changes in tuition and fees from one academic year to the next, students returning from a leave of absence or temporary withdrawal will be billed at the current class rate for MBA and/or at the current academic year rate for PSM.

APPLIED CHEMICAL SCIENCES DEGREE

Graduate students in the Applied Chemical Science program will take courses as listed in the [GENERAL ANNOUNCEMENTS](#):

Check availability on the Registrar's Office Course Schedule site Substitutions can be approved by advising faculty

Note: An individual course may not be offered every year, and some courses may have pre-requisites or require instructor permission.

Course Number	Course Title	Credit Hours
Core Degree Requirements for ALL 3 Areas of Specialization		
Required Cohort Courses: 10 credit hours (all courses below)		
NSCI 501	PROFESSIONAL MASTER'S SEMINAR (2 semesters required, 1st semester)	1
NSCI 501	PROFESSIONAL MASTER'S SEMINAR (2 semesters required, 2nd semester)	1
NSCI 511	SCIENCE POLICY, AND ETHICS	3
NSCI 610	MANAGEMENT FOR SCIENCE AND ENGINEERING	3
Required 3 - 6 months Internship		
NSCI 512 Internship Report & Presentation (enroll semester after internship)	PROFESSIONAL MASTER'S PROJECT	1
NSCI 514 Internship (enroll when doing intership)	PROFESSIONAL MASTERS INTERNSHIP	3
Required Core Chemistry Courses: 9 Credit Hours		
CHEM 590	PROFESSIONAL MASTERS SEMINAR IN APPLIED CHEMISTRY	3
CHEM 591	RESEARCH LABORATORY EXPERIENCE	3
CHEM 592	ANALYSIS AND VISUALIZATION OF BIOLOGICAL DATA	0-3
Area of Specialization		
<i>Select 1 of the following Areas of Specialization (see Areas of Specialization below)</i>		12-13.5
Bioorganic Chemistry		
Chemistry for the Energy Industry		
Computational Chemistry and Data Science		
Area of Specialization: Bioorganic Chemistry		
Select a minimum of 4 courses (minimum of 12 credit hours) from the following:		

CHEM 501	ADVANCED ORGANIC CHEMISTRY	3
CHEM 511	SPECTRAL METHODS IN ORGANIC CHEMISTRY	
CHEM 515	CHEMICAL KINETICS AND DYNAMICS	3
CHEM 542	MEDICINAL CHEMISTRY I	3
CHEM 547	SUPRAMOLECULAR CHEMISTRY	
CHEM 548	PEPTIDE CHEMISTRY DESIGN, SYNTHESIS AND STRUCTURE	
CHEM 552	CHEMICAL BIOLOGY I	
or CHEM 562	ORGANIC CHEMISTRY OF ENZYME-CATALYZED REACTIONS	3
or BIOS 558	FUNDAMENTALS OF QUANTITATIVE ENVIRONMENTAL HEALTH RISK ASSESSMENT	
CHEM 553	STRATEGIC APPLICATIONS OF NAMED REACTIONS IN ORGANIC SYNTHESIS	

Area of Specialization: Chemistry for the Energy Industry

Select a minimum of 4 courses (minimum of 12 credit hours) from the following:

CHBE 505	ADVANCED NUMERICAL METHODS WITH ENGINEERING APPLICATIONS	
CHBE 517	FUNDAMENTALS OF MATERIALS IN ENERGY AND SUSTAINABILITY	3
CHBE 550	PETROLEUM PHASE BEHAVIOR AND FLOW ASSURANCE	
CHEM 511	SPECTRAL METHODS IN ORGANIC CHEMISTRY	3
CHEM 520	CLASSICAL AND STATISTICAL THERMODYNAMICS	3
CHEM 533	NANOSCIENCE AND NANOTECHNOLOGY I	
CHEM 547	SUPRAMOLECULAR CHEMISTRY	
CHEM 575	PHYSICAL METHODS IN INORGANIC CHEMISTRY	

Area of Specialization: Computational Chemistry and Data Science

CHBE 505	ADVANCED NUMERICAL METHODS WITH ENGINEERING APPLICATIONS	
CHEM 515	CHEMICAL KINETICS AND DYNAMICS	3
CHEM 523	ADVANCED ANALYSIS METHODS FOR MOLECULAR DYNAMICS FROM STATISTICAL MECHANICS TO MACHINE LEARNING	
CHEM 537	BIOPHYSICAL CHEMISTRY	3
CHEM 551	BIOMOLECULAR CONCEPTS	
EEPS 585	COMPUTATIONAL AND DATA SCIENCE IN THE ENERGY INDUSTRY	
EEPS 587	SEM: PETROLEUM GEOCHEMISTRY -	

	PRINCIPALS AND PRACTICE	
STAT 532	FOUNDATIONS OF STATISTICAL INFERENCE I	
STAT 533	FOUNDATIONS OF STATISTICAL INFERENCE II	
STAT 535	DATA SCIENCE PROJECTS	
or STAT 630	STATISTICAL DESIGNS FOR CLINICAL TRIALS	
Electives: 9 Credit Hours Note: MGMT courses are typically 1.5 credit hours		
EEPS 585	COMPUTATIONAL AND DATA SCIENCE IN THE ENERGY INDUSTRY	3
EEPS 587	SEM: PETROLEUM GEOCHEMISTRY - PRINCIPALS AND PRACTICE	
MGMT 610	FUNDAMENTALS OF THE ENERGY INDUSTRY	1.5
MGMT 625	DESIGN THINKING	
MGMT 633	ROLES OF PHYSICIANS, SCIENTISTS, ENGINEERS AND MBA'S IN HIGH-TECH STARTUPS	
MGMT 676	LEADERSHIP, ETHICS, AND FREE ENTERPRISE	1.5
MGMT 686	INTRODUCTION TO MARKETING RESEARCH	1.5
MGMT 717	PROJECT MANAGEMENT	1.5
MGMT 721	BUSINESS LAW	
MGMT 747	REGULATORY ENVIRONMENT OF BUSINESS	1.5
MGMT 771	DIGITAL MARKETING	1.5
NSCI 515	FOUNDATIONS OF PROJECT AND PROGRAM MANAGEMENT	
TOTAL CREDIT HOURS: 42		

TOTAL REQUIRED CREDIT HOURS: 42

Including a three-to-six-month internship:

The experiential learning experience is offered via a three-to-six-month work immersion. The internship will be under the guidance of a host company, government agency, or non profit organization.

With approval of the advising faculty, a capstone project, independent study, or a research project can be used to fulfill the internship requirement.

At the conclusion of the internship (or the conclusion of the capstone project, independent study, or research project), students must present a summary of their project in both oral and written form for the cohort course Professional Master's Project (NSCI 512). Part-time students who already work in their area of study may fulfill the internship requirements by working on an approved project with their current employer.

Please note: The General Announcements (GA) is the official source for the Rice curriculum. If there is a discrepancy between the GA and any other websites or publications, the GA shall prevail as the authoritative source. Click [here](#) to review the latest curriculum and requirements.

BIOSCIENCE AND HEALTH POLICY DEGREE

Graduate students in the BIOSCIENCE AND HEALTH POLICY program will take courses as listed in the [GENERAL ANNOUNCEMENTS](#):

Check availability on the Registrar's Office Course Schedule site Substitutions can be approved by advising faculty

Note: An individual course may not be offered every year, and some courses may have pre-requisites or require instructor permission.

Course Number	Course Title	Credit Hours
Required Cohort Courses: 10 credit hours (all courses below)		
NSCI 501	PROFESSIONAL MASTER'S SEMINAR (2 semesters required, 1st semester)	1
NSCI 501	PROFESSIONAL MASTER'S SEMINAR (2 semesters required, 2nd semester)	1
NSCI 511	SCIENCE POLICY, AND ETHICS	3
NSCI 610 / ENGI 610	MANAGEMENT FOR SCIENCE AND ENGINEERING	3
Required 3 - 6 months Internship		
NSCI 512 Internship Report & Presentation (enroll semester after internship)	PROFESSIONAL MASTER'S PROJECT	1
NSCI 514 Internship (enroll when doing internship)	PROFESSIONAL MASTERS INTERNSHIP	3
Required Core Courses: <i>Select a minimum of 12 credit hours from the following: most courses are 3 credit hours</i>		
BIOS 520	MOLECULAR BASIS OF DISEASES	3
BIOS 523	CONSERVATION BIOLOGY	3
BIOS 524	MICROBIAL PHYSIOLOGY AND GENETICS	3
BIOS 525	PLANT MOLECULAR GENETICS AND DEVELOPMENT	3
BIOS 534	EVOLUTION	3
BIOS 543	DEVELOPMENTAL NEUROBIOLOGY	3
BIOS 547	EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE	3
BIOS 549	ADVANCED CELL AND MOLECULAR NEUROSCIENCE	3
BIOS 550	VIRUSES AND INFECTIOUS DISEASES	3
BIOS 558	FUNDAMENTALS OF QUANTITATIVE ENVIRONMENTAL HEALTH RISK ASSESSMENT	3
BIOS 560	CANCER BIOLOGY	3
BIOS 570	COMPUTATION WITH BIOLOGICAL DATA	3

BIOS 572	IMMUNOLOGY	3
BIOS 585	CELLULAR AND MOLECULAR MECHANISMS OF THE NEURON	3
Analytical Competency Requirement		
<i>Analytical Competency Requirement: 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:</i>		
A) Statistics or Data Analytics - Select a minimum of 3 credit hours from the following: *MGMT COURSES ARE TYPICALLY 1.5 CREDIT HOURS*		
BIOE 552	INTRO COMPUTATIONAL SYSTEMS BIOLOGY: MODELING & DESIGN PRINCIPLES OF BIOCHEM NETWORKS	
BIOS 538	ANALYSIS AND VISUALIZATION OF BIOLOGICAL DATA	3
DSCI 535	APPLIED MACHINE LEARNING AND DATA SCIENCE PROJECTS	4
EEPS 586	INTRODUCTION TO DATA SCIENCE & METHODS	3
STAT 553	BIOSTATISTICS	3
STAT 605	R FOR DATA SCIENCE	3
B) Finance or Economics - Select a minimum of 3 credit hours from the following: *MGMT COURSES ARE TYPICALLY 1.5 CREDIT HOURS*		
ECON 565	HEALTH ECONOMICS	
MGMT 631	HEALTH INSURANCE IN THE U.S.: THE ESSENTIALS	1.5
MGMT 678	BUSINESS OF HEALTHCARE	1.5
MGMT 690	HEALTHCARE STRATEGY	1.5
MGMT 751	ECONOMICS OF HEALTH CARE SECTORS	
MGMT 793	CREATING THE DATA DRIVEN BUSINESS	
PH 3910	INTRODUCTION TO HEALTH ECONOMICS	
C) Policy Courses - Select a minimum of 6 credit hours from the following: *MGMT COURSES ARE TYPICALLY 1.5 CREDIT HOURS*		
ANTH 581	MEDICAL ANTHROPOLOGY	
ANTH 643	ANTHROPOLOGY OF RACE, ETHNICITY AND HEALTH	
BIOS 670	CURRENT BIOSCIENCES AND HEALTH POLICY TOPICS	3
HEAL 580	DISPARITIES IN HEALTH IN AMERICA	3
NSCI 530	THE SHAPING OF HEALTH POLICY	3
SOCI 525	POPULATION HEALTH SEMINAR	
SOPE 506	APPLICATIONS OF PROGRAM EVALUATION – HEALTH	3
Elective Requirements: Select a minimum of 6 credit hours from the follow or additional hours from other section (beyond the required hours) *MGMT COURSES ARE TYPICALLY 1.5 CREDIT HOURS*		
ASIA 556	GENOMIC GOVERNANCE IN ASIA	
BIOS 670	CURRENT BIOSCIENCES AND HEALTH POLICY TOPICS	3

ENGI 529	ETHICS AND ENGINEERING LEADERSHIP	3
HEAL 507	EPIDEMIOLOGY	3
HEAL 560	PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION	
MGMT 623	EARLY DEVELOPMENT AND ENTREPRENEURSHIP IN A BIOTECH/MEDTECH STARTUP	
MGMT 631	HEALTH INSURANCE IN THE U.S.: THE ESSENTIALS	1.5
MGMT 633	ROLES OF PHYSICIANS, SCIENTISTS, ENGINEERS AND MBA'S IN HIGH-TECH STARTUPS	
MGMT 690	HEALTHCARE STRATEGY	1.5
MGMT 691	BREAKTHROUGH NEGOTIATIONS IN APPLIED CONTEXTS	1.5
MGMT 712	PROCESS MANAGEMENT AND QUALITY IMPROVEMENT	
MGMT 721	BUSINESS LAW	1.5
MGMT 744	SERVICES OPERATIONS	1.5
MGMT 778	CUSTOMER EXPERIENCE MANAGEMENT	1.5
MGMT 793	CREATING THE DATA DRIVEN BUSINESS	
MGMT 799	HEALTHCARE INNOVATION AND ENTREPRENEURSHIP	
NSCI 515	FOUNDATIONS OF PROJECT AND PROGRAM MANAGEMENT	3
SOPE 506	APPLICATIONS OF PROGRAM EVALUATION – HEALTH	3
Total Credit Hours: 42 Credit Hours		

Including a three-to-six-month internship:

The experiential learning experience is offered via a three-to-six-month work immersion. The internship will be under the guidance of a host company, government agency, or non-profit organization.

With approval of the advising faculty, a capstone project, independent study, or a research project can be used to fulfill the internship requirement.

At the conclusion of the internship (or the conclusion of the capstone project, independent study, or research project), students must present a summary of their project in both oral and written form for the cohort course Professional Master's Project (NSCI 512). Part-time students who already work in their area of study may fulfill the internship requirements by working on an approved project with their current employer.

Please note: The General Announcements (GA) is the official source for the Rice curriculum. If there is a discrepancy between the GA and any other websites or publications, the GA shall prevail as the authoritative source. Click [here](#) to review the latest curriculum and requirements.

ENVIRONMENTAL ANALYSIS DEGREE

Graduate students in the ENVIRONMENTAL ANALYSIS program will take courses as listed in the [GENERAL ANNOUNCEMENTS](#):

Check availability on the Registrar's Office Course Schedule site. Substitutions can be approved by advising faculty

Note: An individual course may not be offered every year, and some courses may have prerequisites or require instructor permission.

Course Number	Course Title	Credit Hours
Required Cohort Courses: 10 credit hours (all courses below)		
NSCI 501	PROFESSIONAL MASTER'S SEMINAR (2 semesters required, 1st semester)	1
NSCI 501	PROFESSIONAL MASTER'S SEMINAR (2 semesters required, 2nd semester)	1
NSCI 511	SCIENCE POLICY, AND ETHICS	3
NSCI 610 / ENGI 610	MANAGEMENT FOR SCIENCE AND ENGINEERING	3
Required 3 - 6 months Internship		
NSCI 512 Internship Report & Presentation (enroll semester after internship)	PROFESSIONAL MASTER'S PROJECT	1
NSCI 514 Internship (enroll when doing intership)	PROFESSIONAL MASTERS INTERNSHIP	3
Required Core Courses: 9 credit hours		
BIOS 571	ENVIRONMENTAL MANAGEMENT	3
CEVE 501	CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE	3
or CEVE 510	PRINCIPLES OF ENVIRONMENTAL ENGINEERING	
<i>Select 1 course from the following:</i>		
BIOS 538	ANALYSIS AND VISUALIZATION OF BIOLOGICAL DATA	3
BIOS 558	FUNDAMENTALS OF QUANTITATIVE ENVIRONMENTAL HEALTH RISK ASSESSMENT	3
CEVE 507	ENERGY AND THE ENVIRONMENT	3
CEVE 543	STATISTICAL-PHYSICAL METHODS FOR HYDROCLIMATE EXTREMES AND CATASTROPHES	3
STAT 685	ENVIRONMENTAL STATISTICS AND DECISION MAKING	

Elective Courses: 21 credit hours		
<i>Electives must include:</i> 9 credit hours from one focus area		
PLUS		
3 credit hours from Management and Policy focus area 3 credit hours from Quantitative Decision-Making focus area 3 credit hours from subject code CEVE (Civil and Environmental Engineering) 3 credit hours from subject code BIOS (Ecology and Evolutionary Biology)		
ENVIRONMENTAL SUSTAINABILITY FOCUS AREA		
BIOS 523	CONSERVATION BIOLOGY	3
BIOS 559	SUSTAINABILITY IMPACT ASSESSMENTS	3
BIOS 563	TOPICS IN ECOLOGY (FALL)	1
BIOS 568	TOPICS IN ECOLOGY (SPRING)	1
BIOS 569	CORE COURSE IN ECOLOGY AND EVOLUTIONARY BIOLOGY	1
BIOS 574	GLOBAL CHANGE BIOLOGY	3
BIOS 580	SUSTAINABLE DEVELOPMENT AND REPORTING	3
CEVE 501	CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE	3
CEVE 502	SUSTAINABLE DESIGN	3
CEVE 507	ENERGY AND THE ENVIRONMENT	3
CEVE 508	INTRODUCTION TO AIR POLLUTION CONTROL	3
CEVE 509	HYDROLOGY AND WATER RESOURCES ENGINEERING	3
CEVE 511	ATMOSPHERIC CHEMISTRY AND CLIMATE	3
CEVE 518	ENVIRONMENTAL HYDROGEOLOGY	3
CEVE 520	ENVIRONMENTAL REMEDIATION RESTORATION	3
CEVE 523	APPLIED SUSTAINABLE PLANNING AND DESIGN	3
CEVE 526	SMART MATERIALS FOR THE ENVIRONMENT	3
CEVE 534	FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT	3
CEVE 535	PHYSICAL CHEMICAL PROCESSES FOR WATER QUALITY CONTROL	3
CEVE 536	ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDIATION	3
CEVE 544	ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY	3
CEVE 550	ENVIRONMENTAL ORGANIC CHEMISTRY	3
CHBE 548	ENERGY SYSTEMS AND SUSTAINABLE DEVELOPMENT	3
DSCI 535 / COMP 549	APPLIED MACHINE LEARNING AND DATA SCIENCE PROJECTS	4

EEPS 592	SPECIAL TOPICS IN EARTH, ENVIRONMENTAL & PLANETARY SCIENCES	2
EEPS 632	FLUID FLOW AND TRANSPORT PROCESSES IN EARTH, ENVIRONMENTAL AND PLANETARY SCIENCES.	3
EEPS 635	REMOTE SENSING	3
EEPS 638	THE SCIENCE OF NATURE-BASED CARBON SEQUESTRATION	3
EEPS 645	EARTH AND PLANETARY INTERIORS	3
EEPS 657	CARBON CAPTURE, UTILIZATION AND STORAGE	3
EEPS 699	GRAPHIC AND VISUAL DESIGN FOR SCIENTISTS	3
MGMT 658	APPLIED RISK MANAGEMENT	1.5
MGMT 758	ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) ISSUES IN STRATEGY	1.5
Management and Policy Focus Area		
CEVE 506	INTRODUCTION TO ENVIRONMENTAL LAW	3
CEVE 529 / ENGI 529	ETHICS AND ENGINEERING LEADERSHIP	3
CHBE 549	ECONOMICS AND POLICIES OF THE ENERGY TRANSITION	3
ECON 611 or MGMT 611	GEOPOLITICS OF ENERGY, GEOPOLITICS OF ENERGY	4
GLBL 543	ENERGY GEOPOLITICS	3
MGMT 561	BUSINESS-GOVERNMENT RELATIONS	1.5
MGMT 609	ENERGY MARKETS IN TRANSITION	1.5
MGMT 610	FUNDAMENTALS OF THE ENERGY INDUSTRY	1.5
MGMT 670	OPERATIONS STRATEGY	1.5
MGMT 676	LEADERSHIP, ETHICS, AND FREE ENTERPRISE	1.5
MGMT 721	BUSINESS LAW	1.5
MGMT 747	REGULATORY ENVIRONMENT OF BUSINESS	1.5
MGMT 758	ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) ISSUES IN STRATEGY	1.5
NSCI 515	FOUNDATIONS OF PROJECT AND PROGRAM MANAGEMENT	3
Quantitative Decision-Making Focus Area		
BIOS 538	ANALYSIS AND VISUALIZATION OF BIOLOGICAL DATA	3
BIOS 558	FUNDAMENTALS OF QUANTITATIVE ENVIRONMENTAL HEALTH RISK ASSESSMENT	3
CEVE 521	CLIMATE RISK MANAGEMENT	3
CEVE 543	STATISTICAL-PHYSICAL METHODS FOR HYDROCLIMATE EXTREMES AND CATASTROPHES	3
DSCI 535 / COMP 549	APPLIED MACHINE LEARNING AND DATA SCIENCE	4

	PROJECTS	
EEPS 584	DATA SCIENCE ENVIRONMENTAL AND GEOSCIENCES	3
EEPS 586	INTRODUCTION TO DATA SCIENCE & METHODS	3
EEPS 635	REMOTE SENSING	3
EEPS 636	GIS FOR SCIENTISTS AND ENGINEERS	3
EEPS 645	EARTH AND PLANETARY INTERIORS	3
EEPS 699	GRAPHIC AND VISUAL DESIGN FOR SCIENTISTS	3
MGMT 595	DATA ANALYSIS	3
MGMT 758	ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) ISSUES IN STRATEGY	1.5
NSCI 515	FOUNDATIONS OF PROJECT AND PROGRAM MANAGEMENT	3
STAT 553	BIOSTATISTICS	3
STAT 605 or STAT 606	R FOR DATA SCIENCE, SAS STATISTICAL PROGRAMMING	3
STAT 615	REGRESSION AND LINEAR MODELS	3
STAT 685	ENVIRONMENTAL STATISTICS AND DECISION MAKING	3
Minimum Credit Hours: 42 Hours		

Including a three-to-six-month internship:

The experiential learning experience is offered via a three-to-six-month work immersion. The internship will be under the guidance of a host company, government agency, or non- profit organization.

With approval of the advising faculty, a capstone project, independent study, or a research project can be used to fulfill the internship requirement.

At the conclusion of the internship (or the conclusion of the capstone project, independent study, or research project), students must present a summary of their project in both oral and written form for the cohort course Professional Master's Project (NSCI 512). Part-time students who already work in their area of study may fulfill the internship requirements by working on an approved project with their current employer.

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ENERGY GEOSCIENCE DEGREE

Graduate students in the ENERGY GEOSCIENCE program will take courses as listed in the [GENERAL ANNOUNCEMENTS](#):

Check availability on the Registrar's Office Course Schedule site. Substitutions can be approved by advising faculty

Note: An individual course may not be offered every year, and some courses may have prerequisites or require instructor permission.

Course Number	Course Title	Credit Hours
Core Degree Requirements for ALL 4 Areas of Specialization		
Required Cohort Courses: 10 credit hours (all courses below)		
NSCI 501	PROFESSIONAL MASTER'S SEMINAR (2 semesters required, 1st semester)	1
NSCI 501	PROFESSIONAL MASTER'S SEMINAR (2 semesters required, 2nd semester)	1
NSCI 511	SCIENCE POLICY, AND ETHICS	3
NSCI 610 / ENGI 610	MANAGEMENT FOR SCIENCE AND ENGINEERING	3
Required 3 - 6 months Internship		
NSCI 512 Internship Report & Presentation (enroll semester after internship)	PROFESSIONAL MASTER'S PROJECT	1
NSCI 514 Internship (enroll when doing intership)	PROFESSIONAL MASTERS INTERNSHIP	3
Required Core Science Courses: 12-13 Credit Hours		
EEPS 548	3D SEISMIC REFLECTION DATA INTERPRETATION	3
EEPS 579	APPLIED SUBSURFACE SYSTEMS: ANALYTICAL METHODS FOR ENERGY AND SUSTAINABILITY	4

EEPS 583	DATA MANAGEMENT AND DATA GOVERNANCE	3
EEPS 659	WELL LOGGING AND PETROPHYSICS	3
Area of Specialization: 18-20		
<i>Select 1 of the following Areas of Specialization (see Areas of Specialization below):</i>		
Energy Data Management		
Energy Transition and Sustainability		
Geology		
Geophysics		
Area of Specialization: Energy Data Management		
Core Requirements (for the Area of Specialization: Energy Data Management)		
EEPS 584	DATA SCIENCE ENVIRONMENTAL AND GEOSCIENCES	
EEPS 585	COMPUTATIONAL AND DATA SCIENCE IN THE ENERGY INDUSTRY	3
EEPS 586	INTRODUCTION TO DATA SCIENCE & METHODS	3
Elective Requirements (for the Area of Specialization: Energy Data Management)		
Elective Requirements: Select a minimum of 9 credit hours from the following *MGMT COURSES ARE TYPICALLY 1.5 CREDIT HOURS*		
CHBE 548	ENERGY SYSTEMS AND SUSTAINABLE DEVELOPMENT	3
COMP 543	GRADUATE TOOLS AND MODELS - DATA SCIENCE	3
COMP 556 / ELEC 556	INTRODUCTION TO COMPUTER NETWORKS	4
DSCI 535 / COMP 549	APPLIED MACHINE LEARNING AND DATA SCIENCE PROJECTS	4
ECON 601	ENERGY ECONOMICS I	4
EEPS 634	PALEOCLIMATE	
EEPS 636	GIS FOR SCIENTISTS AND ENGINEERS	
MGMT 610	FUNDAMENTALS OF THE ENERGY INDUSTRY	1.5
MGMT 611	GEOPOLITICS OF ENERGY	1.5
MGMT 616	ENERGY MARKET ORGANIZATION	1.5
MGMT 670	OPERATIONS STRATEGY	1.5

MGMT 676	LEADERSHIP, ETHICS, AND FREE ENTERPRISE	1.5
NSCI 515	FOUNDATIONS OF PROJECT AND PROGRAM MANAGEMENT	3
STAT 518	PROBABILITY	3
Total Credit Hours 18-20		
Credit Hours in Area of Specialization (18 credit hours) + Core Degree Credit Hours (21-22 credit hours) TOTAL Credit Hours = 39-40 credit hours		
Area of Specialization: Energy Transition and Sustainability		
Core Requirements (for the Area of Specialization:Energy Transition and Sustainability)		
EEPS 582	GEOSCIENCES FOR THE ENERGY TRANSITION	3
EEPS 680	ENERGY TRANSITION SEMINAR	1
EEPS 637	EARTH'S NATURAL RESOURCES FOR THE ENERGY TRANSITION	3
or EEPS 638	THE SCIENCE OF NATURE-BASED CARBON SEQUESTRATION	3
Elective Requirements: Select a minimum of 4-5 courses (minimum of 12-15 credit hours) from the following: *MGMT COURSES ARE TYPICALLY 1.5 CREDIT HOURS*		
BIOS 580	SUSTAINABLE DEVELOPMENT AND REPORTING	
BIOS 559	SUSTAINABILITY IMPACT ASSESSMENTS	
CEVE 507	ENERGY AND THE ENVIRONMENT	
CHBE 548	ENERGY SYSTEMS AND SUSTAINABLE DEVELOPMENT	
EEPS 530	SILICICLASTIC SEDIMENTS: DEPOSITIONAL SYSTEMS AND PROCESSES	3
EEPS 584	DATA SCIENCE ENVIRONMENTAL AND GEOSCIENCES	
EEPS 585	COMPUTATIONAL AND DATA SCIENCE IN THE ENERGY INDUSTRY	3
EEPS 593	INTRODUCTION TO GEOTHERMAL ENERGY SYSTEMS	3
EEPS 615	GEOCHEMISTRY OF EARTH'S SURFACE	

EEPS 634	PALEOCLIMATE	
EEPS 636	GIS FOR SCIENTISTS AND ENGINEERS	
EEPS 637	EARTH'S NATURAL RESOURCES FOR THE ENERGY TRANSITION	3
EEPS 638	THE SCIENCE OF NATURE-BASED CARBON SEQUESTRATION	3
EEPS 648	EXPLORATION GEOPHYSICS	4
EEPS 654	INTRODUCTION TO SEISMIC INTERPRETATION: STRUCTURAL STYLES AND SEISMIC STRATIGRAPHY	3
EEPS 658	ENVIRONMENTAL & APPLIED ROCK PHYSICS	3
EEPS 667	GEOMECHANICS	
EEPS 671	EARTH SYSTEMS MODELING I: PHILOSOPHY AND FUNDAMENTALS	
EEPS 672	EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS	
MGMT 610	FUNDAMENTALS OF THE ENERGY INDUSTRY	
MGMT 611	GEOPOLITICS OF ENERGY	
MGMT 616	ENERGY MARKET ORGANIZATION	
MGMT 758	ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) ISSUES IN STRATEGY	
Total Credit Hours 19-20		
Area of Specialization: Geology		
Core Requirements (for the Area of Specialization:Geology)		
EEPS 630	APPLIED STRATIGRAPHIC METHODS	3
or EEPS 530	SILICICLASTIC SEDIMENTS: DEPOSITIONAL SYSTEMS AND PROCESSES	3
EEPS 654	INTRODUCTION TO SEISMIC INTERPRETATION: STRUCTURAL STYLES AND SEISMIC STRATIGRAPHY	3
or EEPS 661	STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS	3
Elective Requirements: Select a minimum of 12 credit		

hours from the following *MGMT COURSES ARE TYPICALLY 1.5 CREDIT HOURS*		
CHBE 548	ENERGY SYSTEMS AND SUSTAINABLE DEVELOPMENT	
EEPS 525	APPLIED SEDIMENTOLOGY I	
EEPS 530	SILICICLASTIC SEDIMENTS: DEPOSITIONAL SYSTEMS AND PROCESSES	3
EEPS 545	THEORETICAL GLOBAL SEISMOLOGY I	
EEPS 578	HYDROCARBON EXPLORATION	3
EEPS 579	APPLIED SUBSURFACE SYSTEMS: ANALYTICAL METHODS FOR ENERGY AND SUSTAINABILITY	4
EEPS 580	SEMINAR: QUANTITATIVE PETROLEUM SYSTEMS ANALYSIS 2	
EEPS 582	GEOSCIENCES FOR THE ENERGY TRANSITION	3
EEPS 592	SPECIAL TOPICS IN EARTH, ENVIRONMENTAL & PLANETARY SCIENCES	
EEPS 615	GEOCHEMISTRY OF EARTH'S SURFACE	
EEPS 630	APPLIED STRATIGRAPHIC METHODS	3
EEPS 633	CLIMATE DYNAMICS	
EEPS 634	PALEOCLIMATE	
EEPS 636	GIS FOR SCIENTISTS AND ENGINEERS	
EEPS 648	EXPLORATION GEOPHYSICS	4
EEPS 654	INTRODUCTION TO SEISMIC INTERPRETATION: STRUCTURAL STYLES AND SEISMIC STRATIGRAPHY	3
EEPS 658	ENVIRONMENTAL & APPLIED ROCK PHYSICS	3
EEPS 660	GLOBAL TECTONICS	
EEPS 661	STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS	3
EEPS 662	TECTONOPHYSICS	3
EEPS 667	GEOMECHANICS	
EEPS 671	EARTH SYSTEMS MODELING I: PHILOSOPHY AND FUNDAMENTALS	

MGMT 610	FUNDAMENTALS OF THE ENERGY INDUSTRY	1.5
MGMT 611	GEOPOLITICS OF ENERGY	1.5
NSCI 515	FOUNDATIONS OF PROJECT AND PROGRAM MANAGEMENT	3
Total Credit Hours 18-20		
Area of Specialization: Geophysics		
Core Requirements (for the Area of Specialization:Geophysics)		
CHBE 548	ENERGY SYSTEMS AND SUSTAINABLE DEVELOPMENT	3
EEPS 578	HYDROCARBON EXPLORATION	3
EEPS 592	SPECIAL TOPICS IN EARTH, ENVIRONMENTAL & PLANETARY SCIENCES	
EEPS 615	GEOCHEMISTRY OF EARTH'S SURFACE	
EEPS 630	APPLIED STRATIGRAPHIC METHODS	3
EEPS 633	CLIMATE DYNAMICS	
EEPS 634	PALEOCLIMATE	
EEPS 636	GIS FOR SCIENTISTS AND ENGINEERS	
EEPS 648	EXPLORATION GEOPHYSICS	4
EEPS 658	ENVIRONMENTAL & APPLIED ROCK PHYSICS	3
EEPS 660	GLOBAL TECTONICS	
EEPS 661	STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS	3
EEPS 662	TECTONOPHYSICS	3
EEPS 667	GEOMECHANICS	
EEPS 671	EARTH SYSTEMS MODELING I: PHILOSOPHY AND FUNDAMENTALS	
MGMT 610	FUNDAMENTALS OF THE ENERGY INDUSTRY	1.5
MGMT 611	GEOPOLITICS OF ENERGY	1.5
NSCI 515	FOUNDATIONS OF PROJECT AND PROGRAM MANAGEMENT	3
Total Credit Hours 18-20		
Credit Hours in Area of Specialization (18 credit hours) + Core Degree Credit Hours (21-22 credit hours) TOTAL		

Including a three-to-six-month internship:

The experiential learning experience is offered via a three-to-six-month work immersion. The internship will be under the guidance of a host company, government agency, or non-profit organization.

With approval of the advising faculty, a capstone project, independent study, or a research project can be used to fulfill the internship requirement.

At the conclusion of the internship (or the conclusion of the capstone project, independent study, or research project), students must present a summary of their project in both oral and written form for the cohort course Professional Master's Project (NSCI 512). Part-time students who already work in their area of study may fulfill the internship requirements by working on an approved project with their current employer.

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SPACE STUDIES DEGREE

Graduate students in the SPACE STUDIES program will take courses as listed in the [GENERAL ANNOUNCEMENTS](#):

Check availability on the Registrar's Office Course Schedule site. Substitutions can be approved by advising faculty

Note: An individual course may not be offered every year, and some courses may have pre-requisites or require instructor permission.

Course Number	Course Title	Credit Hours
Required Cohort Courses: 10 credit hours (all courses below)		
NSCI 501	PROFESSIONAL MASTER'S SEMINAR	1
NSCI 502	SPACE STUDIES SEMINAR	1
NSCI 511	SCIENCE POLICY, AND ETHICS	3
NSCI 515	FOUNDATIONS OF PROJECT AND PROGRAM MANAGEMENT	3
NSCI 610 / ENGI 610	MANAGEMENT FOR SCIENCE AND ENGINEERING	3
Required 3 - 6 months Internship		
NSCI 512 Internship Report & Presentation (enroll semester after internship)	PROFESSIONAL MASTER'S PROJECT	1
NSCI 514 Internship (enroll when doing intership)	PROFESSIONAL MASTERS INTERNSHIP	3
Required Core Technical Courses: 2 courses (6 credit hours) as below		
ASTR 570	SOLAR SYSTEM PHYSICS	3
MECH 578	ORBITAL MECHANICS AND MISSION DESIGN	3
Science and Engineering Core Courses: choose 2 courses (6 credit hours)		
ASTR 554	ASTROPHYSICS OF THE SUN	3
BIOS 524	MICROBIAL PHYSIOLOGY AND	3

	GENETICS	
CHBE 640	METABOLIC ENGINEERING	
EEPS 586	INTRODUCTION TO DATA SCIENCE & METHODS	3
EEPS 635	REMOTE SENSING	3
MECH 554 / BIOE 554 / CEVE 554	COMPUTATIONAL FLUID MECHANICS	3
MECH 592 / NSCI 591	DESIGN FOR AEROSPACE ENVIRONMENTS	3
PHYS 510	MAGNETOSPHERIC PHYSICS	
PHYS 517	COMPUTATIONAL PHYSICS	3
Statistics/Computation Core Courses: 1 course (3 credit hours)		
<i>Select 1 course (minimum of 3 credit hours) from the following:</i>		
CMOR 522	NUMERICAL ANALYSIS	3
DSCI 535 / COMP 549	APPLIED MACHINE LEARNING AND DATA SCIENCE PROJECTS	4
EEPS 586	INTRODUCTION TO DATA SCIENCE & METHODS	3
EEPS 635	REMOTE SENSING	3
EEPS 636	GIS FOR SCIENTISTS AND ENGINEERS	
MECH 554 / BIOE 554 / CEVE 554	COMPUTATIONAL FLUID MECHANICS	3
PHYS 517	COMPUTATIONAL PHYSICS	3
RCEL 506	APPLIED STATISTICS AND DATA SCIENCE FOR ENGINEERING LEADERS	3
STAT 502 / COMP 502 / ELEC 502	NEURAL MACHINE LEARNING I	3
Electives Courses: Select a minimum of 12 Credit hours from 1 of the following areas (engineering, sciences, or management & entrepreneurship) *MGMT COURSES ARE TYPICALLY 1.5 CREDIT HOURS*		
ENGINEERING		
CEVE 504	ATOMSPHERIC PARTICULATE MATTER	

CEVE 511	ATMOSPHERIC CHEMISTRY AND CLIMATE	3
CEVE 576 / MECH 576	STRUCTURAL DYNAMIC SYSTEMS	
COMP 598 / ELEC 598 / MECH 598	INTRODUCTION TO ROBOTICS	3
MECH 554 / BIOE 554 / CEVE 554	COMPUTATIONAL FLUID MECHANICS	3
MECH 578	ORBITAL MECHANICS AND MISSION DESIGN	3
MECH 590	AEROSPACE PROPULSION	3
MECH 591	GAS DYNAMICS	
MECH 592 / NSCI 591	DESIGN FOR AEROSPACE ENVIRONMENTS	3
MECH 594	INTRODUCTION TO AERONAUTICS	3
SCIENCES (Astro Science/Earth Science/Life Sciences)		
ASTR 542	NEBULAR ASTROPHYSICS	
ASTR 554	ASTROPHYSICS OF THE SUN	3
ASTR 555	PROTOSTARS AND PLANETS	
BIOS 524	MICROBIAL PHYSIOLOGY AND GENETICS	3
BIOS 543	DEVELOPMENTAL NEUROBIOLOGY	3
BIOS 570	COMPUTATION WITH BIOLOGICAL DATA	
EEPS 540	CRYOSPHERE	
EEPS 581	MODERN EXPLORATION TECHNOLOGY	
EEPS 617	COSMOCHEMISTRY AND METEORITICS	
EEPS 667	GEOMECHANICS	
EEPS 672	EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS	
EEPS 674	PLANETARY SYSTEMS: ORBITS,	

	ATMOSPHERES, INTERIORS, AND MINOR BODIES	
MGMT 633 / BIOE 633	ROLES OF PHYSICIANS, SCIENTISTS, ENGINEERS AND MBA'S IN HIGH-TECH STARTUPS	
PHYS 510	MAGNETOSPHERIC PHYSICS	
PHYS 541	RADIATIVE PROCESSES	
PHYS 580	INTRODUCTION TO PLASMA PHYSICS	3
MANAGEMENT, POLICY & ENTREPRENEURSHIP		
MGMT 601	FINANCIAL STATEMENT ANALYSIS	3
MGMT 618	BESTSELLERS: THE SCIENCE AND WISDOM	
MGMT 633 / BIOE 633	ROLES OF PHYSICIANS, SCIENTISTS, ENGINEERS AND MBA'S IN HIGH-TECH STARTUPS	1.5
MGMT 658	APPLIED RISK MANAGEMENT	
MGMT 676	LEADERSHIP, ETHICS, AND FREE ENTERPRISE	1.5
MGMT 734	TECHNOLOGY COMMERCIALIZATION LAB	
MGMT 813	LEADING FOR CREATIVITY AND INNOVATION	1.5
MGMT 927	ENTREPRENEURIAL PATHWAYS: AN INTRODUCTION TO ENTREPRENEURSHIP	1.5
RCEL 504	ETHICAL-TECHNICAL LEADERSHIP	3
RCEL 505	ENGINEERING ECONOMICS FOR ENGINEERING LEADERS	3
Interdisciplinary Interest Electives (12 credit hours)		
Select 4 courses (12 credit hours) from any of the Electives listed in the three focus areas above		
TOTAL Credit Hours: 42 Credit Hours		

Including a three-to-six-month internship:

The experiential learning experience is offered via a three-to-six-month work immersion. The internship will be under the guidance of a host company, government agency, or non-profit organization.

With approval of the advising faculty, a capstone project, independent study, or a research project can be used to fulfill the internship requirement.

At the conclusion of the internship (or the conclusion of the capstone project, independent study, or research project), students must present a summary of their project in both oral and written form for the cohort course Professional Master's Project (NSCI 512).

Part-time students who already work in their area of study may fulfill the internship requirements by working on an approved project with their current employer.

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PROFESSIONAL DEVELOPMENT PROGRAM

Mentoring built into the PSM curriculum engages students, alumni, and affiliated community

members in five strategic ways:

1. Mentoring Program:

The main purpose is to connect students with alumni and foster relationships that benefit both the alumni mentor and especially the student. This relationship gives the student an outlet to ask academic, professional and industry-specific questions and allows the alumni mentors an opportunity to educate the next generation of leaders in the field.

2. Guest Lectures/ Panel Discussions:

The monthly seminars host a guest lecture that provides insights into industry-specific topics or related career paths for PSM students. These lectures are structured so that the students have ample time to engage the speaker in a lively discussion following their brief talk.

3. Professional Development and Career Workshops:

The PSM program works in close collaboration with the Rice Center for Career Development, encouraging students to attend workshops that help prepare students for the professional world at large. These workshops include resume and portfolio review, interview techniques, mock interviews, networking practice, et al. The workshops take place throughout the semester, preparing students for internships or full-time employment for the coming summer.

4. Required Internships or Work Experience:

All PSM students are required to complete an experiential learning experience as part of the degree program. Corporate internship providers or faculty supervisors assign a mentor to their respective student intern, and this mentor is expected to provide guidance throughout the internship experience.

5. PSM Industry Board of Affiliates:

Board members are available to provide guidance, mentorship and advice to PSM students throughout their time at Rice.

Expectations of PSM Mentoring Program:

The PSM Office assigns an alum and a student mentor to each incoming student during the summer before arriving at Rice. The incoming students have the responsibility to initiate contact and start a conversation with their mentors and to meet them in person. The PSM Office hosts a student/alumni social at the beginning of the first semester so students can start building their network. Students are provided with a Mentorship Handbook.

STUDENT ADVISING

Two weeks prior to the first semester of study, students will submit a tentative study plan for the entire duration of the degree. Students will indicate which focus area they are interested in and which electives they would like to take.

During orientation week, advisors will meet with each student to review and approve the proposed study plan. Students should continue to consult their advisors throughout their time at Rice to revise

their study plans as necessary. Consultation is especially important before enrollment in courses for the next semester. Students should schedule regular faculty/student meetings with their faculty advisor on a monthly basis.

Enrolled students or alumni contacts are provided to each new incoming student so they can choose a mentor for guidance during the first semester.

Students identified to not be making adequate progress must meet with the PSM Office and the advising faculty to determine a plan with goals and deadlines on how to get back on track.

INTERNSHIP PROGRAM

Students should refer to the **Professional Science Master's Program msIDP Guidebook** which outlines the stages of the internship search process.

Internship Requirements

In addition to coursework, we require a three-to-six-month full-time internship, as part of the Professional Science Master's program. With approval of the advising faculty, a capstone project, independent study, or a research project can also be used to fulfill the internship requirement.

The corporate or government internship should provide the student with practical experience in an industrial or governmental environment, depending on the degree program, and bring about stronger university ties between the university and these organizations.

Internships will typically begin in the summer session after the first year of coursework. Six-month internships begin in the summer and end in December. The student would then complete the final semester of coursework in the spring semester. A three-month internship might take place during the summer session, allowing a student to complete the third semester of coursework in the fall. Alternatively, a three-month internship might begin midway through the summer session and end sometime during the fall. In most cases, the sponsoring company will financially support the intern during the internship period.

Full-time students who have adequate previous industrial experience, or working professionals enrolled on a part-time basis, may request to substitute an independent project for the internship requirement by submitting necessary information to the program committee and obtaining approval from the appropriate faculty director. Students may enroll in classes while completing the approved project.

Students hoping to perform their internship in a non-industrial setting should submit a memo to the program committee outlining the proposed internship and its relationship to the student's professional development to request permission for this variance.

Only students in good standing will be permitted to accept an internship position. Determination of a student's standing will include assessment of the student's GPA (a minimum average of a B- (2.67) is required) and class participation in the Professional Master's Seminar. Furthermore, students must demonstrate a significant amount of effort in obtaining an internship.

If a full-time student is participating in an internship during the spring or fall semester, the student should register for the PSM internship course, NSCI 510, during that semester. This step will ensure that

the student maintains full-time student status and remains eligible for student loans and Rice health insurance. The student will not be charged full tuition during this semester, only a minimal charge to maintain full-time status.

Finding an Internship Position

Students are encouraged to begin searching for an internship during their first semester of coursework. Students must demonstrate a significant amount of effort in obtaining an internship. Interviewing may begin as early as the first semester but should be underway no later than midway through the second semester. Rice's Center for Career Development will help students identify potential positions, prepare resumes, and train for interviews. Before the end of the first semester, students have attended several career-related workshops offered by the Career

Development Center. During the first semester of study, the student should submit an Internship Outline and a resume to the PSM Program Director and schedule an appointment with the Center for Career Development to have their resume reviewed.

The PSM Office will establish regular checks on progress made by students in reaching out to corporate representatives, board members, *et al.* to make sure students work consistently on building their network and reaching out to potential employers.

The internship position should be directly related to the student's area of study and be suited to their career interests in a company, government agency, or national laboratory. Students should avoid internships that involve proprietary information or technologies that cannot be revealed to the faculty advisor or prospective employers. Although working with proprietary information can involve exposure to cutting edge developments, the requisite confidentiality defeats the purpose of providing the student with an experience that can be used to illustrate the student's qualifications for other professional opportunities and creating knowledge that can be shared with others, which most master's projects in all fields seek to do. Students who wish to undertake an internship that involves work that cannot be reported in an internship report must have the internship approved by their faculty advisors. It is not acceptable to turn in reports that omit the scientific or technical work done (the evidence that the student has applied his or her academic knowledge) on the grounds that the work is confidential.

Students will also have many opportunities to make contact with potential employers through Rice's Career Fairs, Professional Science Master's Seminars, PSM receptions and luncheons, PSM Board Members, university events, alumni contacts, and course professors. Students can also monitor job opportunities through Rice's Center for Career Development and are encouraged to make use of the career/job research tools provided by them.

Project Reports & Presentations-General **Instructions for all Programs**

Objectives for Student Reports and Presentations

At the conclusion of the internship or independent project, students must present a summary of their project in both oral and written form. The goals are to:

- A. Test the student's abilities to organize and present information to different audiences,
- B. Test the student's ability to make recommendations based on business goals, and
- C. Evaluate the integration of academic knowledge and industry or not-for-profit experience

obtained during the internship.

Expectations and Grading

Students will be assigned a letter grade for the quality of the two required reports (Project Outline and final internship project report), described below, and the presentation as part of the Professional Master's Project course: NSCI 512.

In the case of an unsatisfactory presentation performance, a second presentation can be scheduled. A second unsatisfactory performance will result in dismissal from the program. PSM Communication Faculty can provide coaching in individual writing and presenting. Students are also encouraged to participate in report-writing/ presenting workshops offered throughout the semester.

Grading Breakdown:

Project Outline (10% of grade) must be submitted half way through the internship. This report should provide a company background (including target market and competitors) and a definition of one major assignment, project, or problem. The project outline might also contain a planned approach to the assignment or problem and an explanation of methods that will be used. (1 – 2 pages) – more details below.

Final report(s) (60% of grade) encapsulate both the technical and business aspects of the internship. For internships that are primarily technical in nature, the student must also address how the technical work fits into the business objectives of the employer. For internships that are primarily business in nature, the student must also address how the business development takes advantage of or benefits the technical aspects of the employer. Students should follow the format described in the Internship Report guidelines specified for their particular program (see below). While preparing the final report(s), the student learns how to address audiences of various knowledge levels and concerns, thus preparing the student for her/his role in technical business environments.

The final report should be first submitted to the internship supervisor and the communication faculty for review and feedback and then forwarded to the program faculty (with a copy to the PSM office) for grading after the students have given their oral presentation.

An oral presentation (30% of grade) will be given to an audience consisting of both scientific and business professionals as well as fellow students and professors.

- The PSM Office will schedule student presentations during the Professional Master's Seminar.
- One week before giving the presentation, the student is required to complete at least one practice session with the PSM Communication Faculty or Center for Academic and Professional Communication (CAPC) consultants.

Detailed Description of Oral Presentation (ACS, EA, EG, and SPS Degree Programs*)

**Students in BHP Degree Program should see the description for Presentation under BHP Report Requirements*

Students are required to practice the presentation either with the PSM Communication Faculty or the Rice Center for Academic and Professional Communication.

Audience: Faculty members of the PSM Oversight Committee, faculty whom a student has worked with in the internship project, local members of the Board of Affiliates, representatives of the host company, fellow students, professors, and other appropriate guests.

Purpose: To communicate project background, problem definition, steps in investigation, and recommendations based upon technology and business goals. Technical data are presented to support the recommendations. The student must consider the audience's expectations as well as its knowledge of business and technology.

Length: 20-25 minutes, plus 5-10 minutes for questions and answers (total length not to exceed 30 minutes).

Detailed Description of Project Outline (All Degree Programs) (due ½ way through internship period)

Audience: Program Director and the student's Faculty Advisor

Purpose: To communicate the scope of work accomplished on the project problem, the timeline for finishing the work (or handing it over to another person in the case of a continuing project), and the principal links between courses the student has taken and the work accomplished in the internship. This connection constitutes the student's contribution to knowledge about the relationship between academic study and its applications, parallel to the intellectual insights otherwise documented in a thesis submitted for a master's degree in other fields.

Length: 1-2 pages

Content: The scope of work accomplished on the project problem

- A. The timeline for finishing the work (or handing it over to another person in the case of a continuing project)
- B. The principal links between courses the student has taken and the work accomplished in the internship
- C. Short profile of the company

Sample Format

1st paragraph: A short description of the company and the type of major project the student has been assigned. In some cases, students are given two or three small projects to enable them to experience a range of types of work the company does.

2nd paragraph: Summary of the degree of completion of the project and the general argument the student expects to make about the types of connections between the courses taken and the project(s) done.

3rd paragraph: Estimate of work to be done in the remaining period, request for assistance needed (if any), problems to be solved (for example, approval process for disclosing information from the company), and so on.

References for Guidance

Pages 69 to 77 of Leadership Communication by Deborah Barrett, ISBN 0-07-291849-7. One copy is available for reference in the PSM office. Alternatively, consult Chapter 20, “Preparing Reports” (beginning on page 719) in Technical Communication, 6th edition, by Rebecca E. Burnett, ISBN 1-4130-0189-0, especially pp. 742-743 on progress reports.

Detailed instructions for Final Reports vary by degree program. *Students should read the instructions for their particular degree program in the pages that follow.*

Applied Chemical Sciences Internship Report

To complete your ACS degree, one comprehensive report that includes both **business and technical aspects** of your internship is required (exceptions for non-typical projects that lack a business or technical aspect are described on the following page).

Prior to submitting the final report, all students are required to have the product reviewed by their internship supervisor and the Rice Center for Academic and Professional Communication or the PSM program communication faculty for review and feedback, before sending it to the faculty advisor. Due dates for fall semester: October 1st and for spring semester: February 21st. **Dates may vary depending on the start of semester.** In addition, students are also required to have their presentation reviewed and practiced with either communication program no later than a week before their presentation date. The final report is due to be submitted to the advising faculty (with a copy to the PSM office) for grading after the students have given their oral presentation.

Late submissions will incur penalties and could impact graduation. Submissions turned in after the last day of the final exam period will not be accepted, and therefore the student will not graduate on time.

- Audiences:** Management or supervisor/faculty internship advisor with whom a student has worked in the internship. ACS program faculty advisor
- Purpose:** To communicate the project background, problem definition, steps in investigation, and solutions with an emphasis on technology and fit with company's or organization's product or technical goals To relate the technical work to the overall business objectives of the project/company
- Content:** This report should demonstrate the student's scientific/technical knowledge that has been applied in the project, including any calculations or analysis required. Must include a specific section describing the business aspect to which the technical work applies.
- Length:** Approximately 15 double-spaced pages, not including figures, graphs, tables, references, and any appendices.

Sample Report Format

Summary (~1 page)

In the same order as the report, the summary should discuss the overview of the company, how the intern's work relates to the goals of the company and major accomplishments in projects. Should stand alone.

Example of summary contents:

- Where you did your internship and description of the organization and how you fit into it,
- What was the goal for your internship,
- What specific project did you work on and how it fit with the master's program,
- What you achieved during your internship (product created, work completed, *etc.*), and
- What future steps on your project will be done later either by someone else in the organization or by another researcher or organization.

Project Background, Context, and Need for Project (~2-3 pages)

- Description of organizational context including company background, company products and factors leading to project
- Company goals in product development or technical problems in company products/processes in need of solutions
- Steps in project definition
- Resulting technical goals

Technical solution to the defined problem and goals (~4-5 pages, not including figures/tables)

- Demonstration of student's technical expertise through data analysis and discussion
- Geoscience and/or geophysical skill application, with data display, graphs and tables, with captions

Business Section (~ 3-4 pages)

- The relationship of the project to the company's overall business strategy and goals •
- The merits of the project in light of the technical and/or strategic goals of the company—*i.e.*, costs and benefits
- How the project might benefit the company if recommendations or solutions were executed •
Recommended steps in executing the recommendations
- Resources needed for executing the recommendations

EXCEPTIONS FOR NON-TYPICAL ACS INTERNSHIP PROJECTS

A typical Applied Chemical Sciences Report is expected to have **both** technical and business aspects. However, if a student has no opportunity within the approved internship to conduct technical work or business-related work, he/she should seek permission from his/her faculty advisor to write a report emphasizing the predominant aspect of the non-typical project. (This exception might apply to a student conducting academic research for a faculty member, working in the business department of a company, etc.)

*The non-typical report should emphasize the **predominant aspect** of the internship, i.e. business or technical, and be written in-depth with appropriate sections as outlined below:*

Business-Only ACS Project Report

Executive Summary (~1 page)

In the same order as the report, the summary should discuss the overview of the company, how the intern's work relates to goals of the company, and major accomplishments in projects. Should stand alone.

Introduction (~2-3 pages)

Sets stage by introducing project background including context within the company, what led to the project and /or problem to be solved, statement of the project, steps in investigation, solution (introduces product/process), benefits and or business reasons for project.

Body (~4-6 pages)

Discussion of recommended solutions, including both technical and financial aspects. This section should explain the basis for the project and issues involved in carrying out the project within the context of the company's goals. This section might include opportunity costs; risk analysis (health, environment, legal); relevant regulations; market potential; explanation of technology; assessment of alternative solutions; financial requirements or cost/benefit analysis; and explanation of results or work done.

Brief Technical Section (~1 page)

Include the following and any additional matters of relevance:

- The relationship and merits of the project to the company's overall technical objectives and goals
- How the business solutions/recommendations impact the technical focus of the company or project

Conclusion (~1 page)

Recap of recommended solution(s) and the business rationale. May include 'next steps.'

Appendices (optional)

Add any appendices illustrating results or related information necessary for acting upon the

recommendation or understanding the report's conclusion.

Technical/Academic-Only ACS Project Report:

Abstract (~1 page, double-spaced)

A concise summary of the report, including project context, technical goals, materials/methods/approaches, results, implications and significance of outcomes, and real or potential applications. Should stand alone, without references to published literature or figures/tables.

Project Background (~2-3 pages)

Context for project, including background of the problem or investigation and factors leading to project. Should include appropriately referenced literature review. Include the researcher's goals for project development or solution to technical problems in the field.

Body/Technical solution to the defined problem and goals (~4-6 pages)

- Discussion of methods and approach to problem
- Demonstration of student's technical expertise through calculations, data analysis, and discussion
- Geoscience and/or geophysical skill application, with data display, graphs and tables, with captions

Conclusion (~1 page)

- Discussion of how the project supports applications of knowledge or development of better systems/techniques to real-world problems (i.e., to problems outside of academia, if the project was in an academic setting). May include 'next steps.'

References: Pages 329 – 333 and Chapter 7 from *Technical Communications in the Global Community* by Deborah C. Andrews, 2nd edition, ISBN 0-13-028152-2. One copy is available for reference in the PSM office.

How to Write and Publish a Scientific Paper by Robert Day and Barbara Gastel, Sixth Edition, ISBN 0-313-33027-9. Several copies are available in the PSM office.

Bioscience & Health Policy Internship Report

To complete your master's degree, two reports—a business and a technical report—and a presentation are required. Preliminary copies of the reports are due **seven weeks** after the beginning of the **semester (Fall – October 15th; Spring – Feb 21st - dates may vary depending on start of semester)**. Final versions are due one week after the oral presentation. Presentations will be scheduled the 1st and 3rd Wednesdays in April or November at random.

Prior to turning in the preliminary copy and final copy of the report to the faculty advisor, **all students are required to have the product reviewed by the Rice Center for Academic and Professional Communication (CAPC) or the PSM program communication faculty**. In addition, students are also required to have the presentation reviewed and practiced with either communication program. After the presentation, only one week is allowed for revisions prior to submitting the final version of the reports. Please address feedback and questions from the presentation in the final version. Late submissions will incur penalties and could impact

graduation. Submissions turned in after the last day of the final exam period will not be accepted, and therefore the student will not graduate on time.

1. Report 1: The Business Report

- Traditionally this report is the shorter of the two required documents. It should be between 6 and 8 pages long. The report should be double-spaced in 10-12-point font. All figures and legends should be clear and legible.
- This report should provide an overview of the internship and include the information below:
 - Where you did your internship and description of the organization and how you fit into it,
 - What was the goal for your internship,
 - What specific project did you work on and how it fit with the master's program,
 - What you achieved during your internship (product created, work completed, *etc.*), and
 - What future steps on your project will be done later either by someone else in the organization or by another researcher or organization.
- Information in this report should be the basis for the presentation.

2. Report 2: The Technical Report

- Traditionally this report is the longer of the two final documents. The length should be between 12 and 20 pages. The paper should be double-spaced in 10-12-point font. All figures and legends should be clear and legible.
- The technical report should be viewed as a policy report. It should highlight the area the student examined during their internship and their choice of a policy question to research further. The report should include a literature review of the policy issue including multiple perspectives (various sides of the argument). The report should conclude with general policy recommendations for addressing any issues targeted as well as future areas for research or discussion.
- This report should provide a larger context for the internship efforts and why the issue(s) studied during the internship is (are) important.

3. Presentation

The purpose of the presentation is to communicate the project background, policy challenges addressed and how the work contributed to understanding of the issue.

If a student participates in multiple internships, then they can choose to focus on a policy topic which links the work together or focus on just one internship project.

Presentation format:

- The presentation should be 20-25 minutes in length, allowing 5 minutes for questions at the end.
- The presentation should include professional-quality slides to guide the discussion.

Environmental Analysis Internship Report

To complete your EA degree, one comprehensive report that includes both **business and technical aspects** of your internship is required (exceptions for non-typical projects that lack a business or technical aspect are described on the following page).

Prior to submitting the report, all students are required to have the product reviewed by the Rice Center for Academic and Professional Communication or the PSM program communication faculty. In addition, students are also required to have the presentation reviewed and practiced with either communication program.

The report(s) are written as a draft so that students may have opportunities to incorporate feedback from communication faculty and program faculty as follows:

- A **draft of the final report(s)** should be submitted to the faculty advisor and the PSM Communication faculty during the middle of the semester following the internship/project completion (*i.e.*, for fall semester: **October 1st** and for spring semester: **Feb. 21st**, dates may vary depending on start of semester! with a copy to be sent to the PSM Office. Within 4 weeks of submission, reports will be evaluated by faculty and returned to the student for editing.
- The **revised final report(s)** should be submitted one week before the student's oral presentation to the Degree Program Advisor, with a copy to the PSM Office for grading.

Late submissions will incur penalties and could impact graduation. Submission turned in after the last day of finals will not be accepted and therefore the student will not graduate on time.

Audiences: Management or supervisor/faculty internship advisor with whom a student has worked in the internship. EA program faculty advisor.

Purpose: To communicate the project background, problem definition, steps in investigation, and solutions with an emphasis on technology and fit with company's or organization's product or technical goals
To relate the technical work to the overall business objectives of the project/company

Content: This report should demonstrate the student's scientific/technical knowledge that has been applied in the project, including any calculations or analysis required. Must include a specific section describing the business aspect to which the technical work applies.

Length: Approximately 15 double-spaced pages, not including figures, graphs, tables, references, and any appendices.

Sample Report Format:

Summary (~1 page)

In the same order as the report, the summary should discuss the overview of the company, how the intern's work relates to goals of the company, and major accomplishments in projects. Should stand alone. Example of summary contents:

- Where you did your internship and description of the organization and how you fit into it,

- What was the goal for your internship,
- What specific project did you work on and how it fit with the master's program,
- What you achieved during your internship (product created, work completed, *etc.*), and
- What future steps on your project will be done later either by someone else in the organization or by another researcher or organization.

Project Background, Context, and Need for Project (~2-3 pages)

- Description of organizational context including company background, company products and factors leading to project
- Company goals in product development or technical problems in company products/processes in need of solutions
- Steps in project definition
- Resulting technical goals

Technical solution to the defined problem and goals (~4-5 pages, not including figures/tables)

- Demonstration of student's technical expertise through data analysis and discussion
- Geoscience and/or geophysical skill application, with data display, graphs and tables, with captions

Business Section (~ 3-4 pages)

- The relationship of the project to the company's overall business strategy and goals •
- The merits of the project in light of the technical and/or strategic goals of the company—*i.e.*, costs and benefits
- How the project might benefit the company if recommendations or solutions were executed •
Recommended steps in executing the recommendations
- Resources needed for executing the recommendations

EXCEPTIONS FOR NON-TYPICAL EA INTERNSHIP PROJECTS

A typical Environmental Analysis Final Report is expected to have **both** technical and business aspects. However, if a student has no opportunity within the approved internship to conduct technical work or business-related work, he/she should seek permission from his/her faculty advisor to write a report emphasizing the predominant aspect of the non-typical project. (This exception might apply to a student conducting academic research for a faculty member, working in the business department of a company, *etc.*)

*The non-typical report should emphasize the **predominant aspect** of the internship, i.e. business or technical, and be written in-depth with appropriate sections as outlined below:*

Business-Only EA Project Report

Executive Summary (~1 page)

In the same order as the report, the summary should discuss the overview of the company, how the intern's work relates to goals of the company, and major accomplishments in projects. Should stand alone.

Introduction (~2-3 pages)

Sets stage by introducing project background including context within the company, what led to the project and /or problem to be solved, statement of the project, steps in investigation, solution

(introduces product/process), benefits and or business reasons for project.

Body (~4-6 pages)

Discussion of recommended solutions, including both technical and financial aspects. This section should explain the basis for the project and issues involved in carrying out the project within the context of the company's goals. This section might include opportunity costs; risk analysis (health, environment, legal); relevant regulations; market potential; explanation of technology; assessment of alternative solutions; financial requirements or cost/benefit analysis; and explanation of results or work done.

Brief Technical Section (~1 page)

Include the following and any additional matters of relevance:

- The relationship and merits of the project to the company's overall technical objectives and goals
- How the business solutions/recommendations impact the technical focus of the company or project

Conclusion (~1 page)

Recap of recommended solution(s) and the business rationale. May include 'next steps.'

Appendices (optional)

Add any appendices illustrating results or related information necessary for acting upon the recommendation or understanding the report's conclusion.

Technical/Academic-Only EA Project Report:

Abstract (~1 page, double-spaced)

A concise summary of the report, including project context, technical goals, materials/methods/approaches, results, implications and significance of outcomes, and real or potential applications. Should stand alone, without references to published literature or figures/tables.

Project Background (~2-3 pages)

Context for project, including background of the problem or investigation and factors leading to project. Should include appropriately referenced literature review and citations/bibliography formatted according to the Chicago Manual of Style. Include the researcher's goals for project development or solution to technical problems in the field.

Body/Technical solution to the defined problem and goals (~4-6 pages)

- Discussion of methods and approach to problem
- Demonstration of student's technical expertise through calculations, data analysis, and discussion
- Geoscience and/or geophysical skill application, with data display, graphs and tables, with captions

Conclusion (~1 page)

Discussion of how the project supports applications of knowledge or development of better systems/techniques to real-world problems (i.e., to problems outside of academia, if the project was in an academic setting). May include 'next steps.'

References: Pages 329 – 333 and Chapter 7 from *Technical Communications in the Global Community* by Deborah C. Andrews, 2nd edition, ISBN 0-13-028152-2. One copy is available for reference in the PSM office.

How to Write and Publish a Scientific Paper by Robert Day and Barbara Gastel, Sixth Edition, ISBN 0-313-33027-9. Several copies are available in the PSM office.

Space Studies Internship Report

To complete your SPS PSM degree, one comprehensive report that includes both **business and technical aspects** of your internship is required (exceptions for non-typical projects that lack a business or technical aspect are described on the following page).

Prior to submitting the final report, all students are required to have the product reviewed by their internship supervisor and the Rice Center for Academic and Professional Communication or the PSM program communication faculty for review and feedback. Due dates for fall semester: **October 1st** and for spring semester: **February 21st. (Dates may vary depending on the start of semester).** In addition, students are also required to have the presentation reviewed and practiced with either communication program latest a week before their presentation date. The final report is due to be submitted to the advising faculty (with a copy to the PSM office) for grading after the students have given their oral presentations.

Late submissions will incur penalties and could impact graduation. Submission turned in after the last day of finals will not be accepted and therefore the student will not graduate on time.

- Audiences:** Management or supervisor/faculty internship advisor with whom a student has worked in the internship SPS program faculty advisor
- Purpose:** To communicate project background, problem definition, steps in investigation, and solutions with an emphasis on technology and fit with the company's or organization's product or technical goals To relate the technical work to the overall business objectives of the project/company.
- Content:** This report should demonstrate the student's scientific/technical knowledge that has been applied in the project, including any calculations or analysis required. Must include a specific section describing the business aspect to which the technical work applies.
- Length:** Between 10 and 15 double-spaced pages, not including figures, graphs, tables, references, and any appendices.

Sample Report Format:

Summary (~1 page)

In the same order as the report, the summary should discuss the overview of the company, how the intern's work relates to goals of the company, and major accomplishments in projects. Should stand alone. Example of summary contents:

- Where you did your internship and description of the organization and how you fit into it,
- What was the goal for your internship,
- What specific project did you work on and how it fit with the master's

- program,
- What you achieved during your internship (product created, work completed, *etc.*), and
- What future steps on your project will be done later either by someone else in the organization or by another researcher or organization

Project Background, Context, and Need for Project (~2-3 pages)

- Description of organizational context including company background, company products and factors leading to project
- Company goals in product development or technical problems in company products/processes in need of solutions
- Steps in project definition
- Resulting technical goals

Technical solution to the defined problem and goals (~4-5 pages, not including figures/tables)

- Demonstration of student's technical expertise through data analysis and discussion
- Geoscience and/or geophysical skill application, with data display, graphs and tables, with captions

Business Section (~ 3-4 pages)

- The relationship of the project to the companies overall business strategy and goals
- The merits of the project in light of the technical and/or strategic goals of the company—*i.e.*, costs and benefits
- How the project might benefit the company if recommendations or solutions were executed
- Recommended steps in executing the recommendations
- Resources needed for executing the recommendations

EXCEPTIONS FOR NON-TYPICAL SPS INTERNSHIP PROJECTS

A typical Space Studies Final Report is expected to have **both** technical and business aspects. However, if a student has no opportunity within the approved internship to conduct technical work or business-related work, he/she should seek permission from his/her faculty advisor to write a report emphasizing the predominant aspect of the non-typical project. (This exception might apply to a student conducting academic research for a faculty member, working in the business department of a company, etc.)

*The non-typical report should emphasize the **predominant aspect** of the internship, i.e. business or technical, and be written in-depth with appropriate sections as outlined below:*

Business-Only SPS Project Report

Executive Summary (~1 page)

In the same order as the report, the summary should discuss the overview of the company, how the intern's work relates to goals of the company, and major accomplishments in projects. Should stand alone.

Introduction (~2-3 pages)

Sets stage by introducing project background including context within the company, what led to the project and /or problem to be solved, statement of the project, steps in investigation, solution (introduces product/process), benefits and or business reasons for project

Body (~4-6 pages)

Necessary discussion of recommended solutions (*i.e.*, brief explanation of product or process

technology and rationale for technology with focus on business and financial aspects). This section should explain the basis for the project and issues involved in carrying out the project— these may help to form the justification for the work within the context of the company’s goals. This section might include opportunity costs; risk analysis (health, environment, legal); a summary of regulations surrounding product or a technical model on which product/process is based; a definition of target market and market potential; explanation of state-of-the-art of technology (with limited detail and with vocabulary aimed at a non-technical audience); comparison/contrast of this solution with that of competitors; competitive advantages (such as patents or other barriers to entry into the market); financial requirements for execution (may include cost/benefit analysis); alternative methods of executing (with cost/benefit analysis); steps in execution; and explanation of results or work done.

Brief Technical Section (~1 page)

Include the following and any additional matters of relevance:

- The relationship and merits of the project to the company’s overall technical objectives and goals
- How the business solutions/recommendations impact the technical focus of the company or project

Conclusion (~1 page)

Recap of recommended solution(s) (*i.e.*, products and processes) and the business rationale. May include ‘next steps.’

Appendices (optional)

Add any appendices illustrating results or related information necessary for acting upon the recommendation or understanding the report’s conclusion.

Technical/Academic-Only SPS Project Report:

Abstract (~1 page, double-spaced)

A concise summary of the report, including project context, technical goals, materials/methods/approaches, results, implications and significance of outcomes, and real or potential applications. Should stand alone, without references to published literature or figures/tables.

Project Background (~2-3 pages)

The context for the project includes the background of the problem or investigation and the factors leading to the project. Should include an appropriately referenced literature review and citations/bibliography formatted according to the Chicago Manual of Style. Include the researcher’s goals for project development or solution to technical problems in the field.

Body/Technical solution to the defined problem and goals (~4-6 pages)

- Discussion of methods and approach to problem
- Demonstration of student’s technical expertise through calculations, data analysis, and discussion
- Scientific or engineering skill application, with data display, graphs and tables, with captions

Conclusion (~1 page)

- Discussion of how the project supports applications of knowledge or development of better systems/techniques to real-world problems (i.e., to problems outside of academia, if the project was in an academic setting). May include ‘next steps.’

Reference: Pages 329 – 333 and Chapter 7 from *Technical Communications in the Global Community* by Deborah C. Andrews, 2nd edition, ISBN 0-13-028152-2. One copy is available for reference in the PSM office.

How to Write and Publish a Scientific Paper by Robert Day and Barbara Gastel, Sixth Edition, ISBN 0-313-33027-9. Several copies are available in the PSM office.

Energy Geoscience Internship Report

To complete your EG PSM degree, one comprehensive report that includes both **business and technical aspects** of your internship is required (exceptions for non-typical projects that lack a business or technical aspect are described on the following page).

The report should be written in a technical journal style of prose (e.g. Tectonophysics, Sedimentology, AAPG Bulletin). The report should not be a chronological summary of the work completed but a well thought out explanation of the work accomplished and the resulting technical and business implications.

Prior to submitting the final report, all students are required to have the product reviewed by their internship supervisor and the Center for Academic and Professional Communication or the PSM program communication faculty for review and feedback. **Due dates for fall semester: October 1st and for spring semester: March 1st. Dates may vary depending on the start of semester.** In addition, students are also required to have the presentation reviewed and practiced with either communication program no later than a week before their presentation date. The final report is due to be submitted to the advising faculty (with a copy to the PSM office) for grading after the students have given their oral presentation. Late submissions will incur penalties and could impact graduation. Submissions turned in after the last day of the final exam period will not be accepted, and therefore the student will not graduate on time.

Audiences: Management or supervisor/faculty internship advisor with whom a student has worked in the internship; Energy Geoscience program faculty advisors

Purpose: To communicate project background, problem definition, steps in investigation, and solutions with an emphasis on technology and fit with company’s or organization’s product or technical goals ; To relate the technical work to the overall business objectives of the project/company

Content: This report should demonstrate the student’s scientific/technical knowledge that has been applied in the project, including any calculations or analysis required. Must include a specific section describing the business aspect to which the technical work applies.

Length: No longer than 15 double-spaced pages, 12-point font, not including figures, graphs, tables, references, and any appendices (by approval).

Sample Report Format:

Summary (~1 page)

In the same order as the report, the summary should discuss the overview of the company, how the

intern's work relates to goals of the company, and major accomplishments in projects. Should stand alone. Example of summary contents:

- Overall Goal of the internship project
- Basic elements of the project (datasets, products created, work completed, etc.)
- Where you did your internship and description of the organization and how you fit into it
- What elements of the PSM program were utilized during the internship

Project Background, Context, and Need for Project (~2 pages)

- Describe the group worked in and where it fits in the overall company
- What is the overall problem worked on and why it needs to be solved
- General outline of the project

Technical solution to the defined problem and goals (~5-7 pages, not including figures/tables)

- Description of study area - regional and local geology, stratigraphy, etc
- Description of data sets, software, etc. that are used in the project
- Description of the data analysis and products
- Interpretation and discussion of data analysis/products
- Conclusions and predictions
- Use figures, graphs and tables as appropriate for each of the above sections
- Recommended future steps of the project.

Business Section (~ 3-4 pages)

- The relationship of the project to the company's overall business strategy and goals •
- The merits of the project considering the technical and/or strategic goals of the company—i.e., costs and benefits
- Resources needed for executing the project recommendations
- How the project might benefit the company if recommendations or solutions were executed

- **References (~ 1 pages)**

- List the source material for all references in the report.
- References need to be in an appropriate journal style and consistent format.

GUIDELINES FOR NON-TYPICAL EG INTERNSHIP PROJECTS

A typical Energy Geoscience Final Report is expected to have **both** technical and business aspects. However, if a student has no opportunity within the approved internship to conduct technical work or business-related work, he/she should seek permission from his/her faculty advisor to write a report emphasizing the predominant aspect of the non-typical project. (This exception might apply to a student conducting academic research for a faculty member, working in the business department of a company, etc.)

*The non-typical report should emphasize the **predominant aspect** of the internship, i.e. business or technical, and be written in-depth with appropriate sections as outlined below:*

Business-Only EG Project Report

Executive Summary (~1 page)

In the same order as the report, the summary should discuss the overview of the company, how the intern's work relates to the goals of the company and major accomplishments in projects. Should stand alone.

Example of summary contents:

- *Over goal of the internship project*
- *Basic elements of the project (datasets, products created, work completed, etc.)*
- *Where you did your internship and description of the organization and how you fit into it*
- *What elements of the PSM program (e.g. courses) was utilized during the internship*

Introduction (~2-3 pages)

Sets stage by introducing project background including context within the company, what led to the project and /or problem to be solved, statement of the project, steps in investigation, solution (introduces product/process), benefits and or business reasons for project.

Body (~4-6 pages)

Necessary discussion of recommended solutions (*i.e.*, brief explanation of product or process technology and rationale for technology with focus on business and financial aspects). This section should explain the basis for the project and issues involved in carrying out the project— these may help to form the justification for the work within the context of the company's goals. This section might include opportunity costs; risk analysis (health, environment, legal); a summary of regulations surrounding product or a technical model on which product/process is based; a definition of target market and market potential; explanation of state-of-the-art technology (with limited detail and with vocabulary aimed at a non-technical audience); comparison/contrast of this solution with that of competitors; competitive advantages (such as patents or other barriers to entry into the market); financial requirements for execution (may include cost/benefit analysis); alternative methods of executing (with cost/benefit analysis); steps in execution; and explanation of results or work done.

Brief Technical Section (~1 page)

Include the following and any additional matters of relevance:

- The relationship and merits of the project to the company's overall technical objectives and goals
- How the business solutions/recommendations impact the technical focus of the company or project

Conclusion (~1 page)

Recap of recommended solution(s) (*i.e.*, products and processes) and the business rationale. May include 'next steps.'

Appendices (optional)

Add any appendices illustrating results or related information necessary for acting upon the recommendation or understanding the report's conclusion.

Software/Programming-related EG Project Report

Executive Summary (~1 page)

In the same order as the report, the summary should discuss the overview of the company, how the intern's work relates to goals of the company, and major accomplishments in projects. Should stand alone.

Introduction (~2-3 pages)

Set stage by introducing project background including context within the company, explain the rationale for creation of software, what led to the project and /or problem to be solved, statement of the project, steps in investigation, solution (introduces product/process), benefits and or business reasons for project.

Body (~4-6 pages)

Necessary discussion of recommended solutions (*i.e.*, brief explanation of platform and rationale for technology with focus on who is the user, what is their need, how is it going to make the user's workflow more efficient and robust.)

This section should explain the basis for the project and issues involved in carrying out the project—these may help to form the justification for the work within the context of the company's goals. This section might include expected outputs, how software will be used, how developers interact with clients, and financial expectations.

A definition of target market and market potential; explanation of state-of-the-art technology (with limited detail and with vocabulary aimed at a non-technical audience); comparison/contrast of this software solution with that of competitors; competitive advantages (such as patents or other barriers to entry into the market); financial requirements for execution (may include cost/benefit analysis); and explanation of results or work done.

Brief Technical Section (~1 page)

Include the following and any additional matters of relevance:

- The relationship and merits of the project to the company's overall technical objectives and goals
- How the software will impact the technical focus of the company or project
- What language was used, what are the requirements of using software, explanation of inputs and methodology used

Conclusion (~1 page)

Recap of software and solutions it will provide and the business rationale. May include 'next steps.'

References (~ 1 page)

- *List the source material for all references in the report.*
- *References need to be in an appropriate journal style and consistent format.*

Appendices (optional)

Add any Appendices illustrating results or related information necessary for acting upon the recommendation or understanding the report's conclusion.

Technical/Academic-Only EG Project Report:**Abstract (~1 page, double-spaced)**

A concise summary of the report, including project context, technical goals, materials/ methods/approaches, results, implications and significance of outcomes, and real or potential applications. Should stand alone, without references to published literature or figures/tables.

Example of summary contents:

- Overall goal of the internship project
- Basic elements of the project (datasets, products created, work completed, etc.)
- What group you did your internship in and how your study fit into it
- What elements of the PSM program (e.g. courses) was utilized during the internship

Project Background (~2-3 pages)

- Context for project, including background of the problem or investigation and factors leading to project. Include the researcher's goals for project development or solution to technical problems in the field.
- Should include appropriately referenced literature review.

Body/Technical solution to the defined problem and goals (~4-6 pages)

- Description of study area – regional and local geology, stratigraphy, etc
- Description of data sets, software, etc. used in the project
- Description of the data analysis and products
- Interpretation and discussion of data analysis/products
- Conclusions and predictions
- Use figures, graphs and tables as appropriate for each of the above sections
- Recommended future steps of the project.

Conclusion (~1 page)

- Discussion of how the project supports applications of knowledge or development of better systems/techniques to real-world problems (i.e., to problems outside of academia, if the project was in an academic setting). May include 'next steps.'

References (~ 1 page)

List the source material for all references in the report.

References need to be in an appropriate journal style and consistent format.

Resources: Pages 329 – 333 and Chapter 7 from *Technical Communications in the Global Community* by Deborah C. Andrews, 2nd edition, ISBN 0-13-028152-2. One copy is available for reference in the PSM office. *How to Write and Publish a Scientific Paper* by Robert Day and Barbara Gastel, Sixth Edition, ISBN 0-313-33027-9. Several copies are available in the PSM office.

MANAGEMENT ELECTIVES

Through a special arrangement with the Jones Graduate School of Business, Professional Master's students have the opportunity to register for several elective courses offered through the MBA program, including (but not limited to):

MGMT 610 FUNDAMENTALS OF THE ENERGY INDUSTRY

MGMT 625 DESIGN THINKING

MGMT 686 INTRODUCTION TO MARKETING RESEARCH

MGMT 689 DECISION MODELS

MGMT 717 PROJECT MANAGEMENT

MGMT 721 BUSINESS LAW

MGMT 724 SOCIAL ENTERPRISE

MGMT 747 REGULATORY ENVIRONMENT and others

NOTE: Courses vary. Some listed courses may not be offered every year, and others may be offered that satisfy the requirements with pre-approval. Students should consult with their academic advisors before enrolling.

MBA students receive priority registration, so PSM students will only be permitted to register on a space available basis. Management courses are NOT open for web registration for non-MBA students.

SPECIAL REGISTRATION PROCESS

PSM students must get approval from the faculty teaching the course via Special Registration Form or email, i.e. signature on the form, or sent as a forwarded email from the professor.

This needs to be forwarded to the Jones School Registrar at jgsbregistrar@rice.edu who will process the request, and register the student. Once the process is completed they will notify the student afterward.

It is very important to ATTEND THE FIRST CLASS of a management course, whether you are registered or not. Some professors are very strict and will not allow a student to enroll if he/she has not attended the first class.

If a MGMT course has reached capacity, it will be unavailable to PSM students.

OTHER REGULATIONS

Failure to follow the deadlines listed in the “Rice PSM Internship Requirements” will result in the student being put on probation, and a letter stating this circumstance will be placed in the student’s file. If the required documentation is not submitted within two weeks, the PSM Office, after consultation with the faculty, can terminate the student from the program.

All graduate students are expected to maintain continuous enrollment, unless an official leave of absence has been granted. The procedure for obtaining a leave of absence is outlined in the

General Announcements.

Problems or conflicts may arise during a student's graduate education. Students should take responsibility for informing the appropriate faculty of any such problems. All parties involved should work together amicably with the goal of resolving the problem informally if at all possible. When attempts to resolve a problem informally do not meet with success, the grievance procedure outlined in the General Announcements will be adopted.

The advising faculty of all five track programs forms the Oversight Committee of the PSM program that meets at least once a year to review the progress of the students, discuss student feedback, and assess the curriculum of each track to implement updates where needed. Student performance is monitored every semester to ensure successful completion of each student's degree requirements.

ACADEMIC FRAUD AND THE HONOR SYSTEM

Academic fraud is one of the areas of university life that fall within the scope of the Honor System. Violating the Honor Code requirements of an assignment or failing to credit one's sources constitutes academic fraud and would, therefore, violate the Honor Code.

It is the responsibility of each student to complete all assignments according to the requirements set forth by the professor. All assignments submitted at the University are pledged, either explicitly or implicitly, and students fulfill their responsibilities to their fellow students under the Honor System when they can pledge, in good conscience, that their work is their own.

The Student Code of Conduct defers detailing a system of rules regarding academic misconduct to The Honor Code. This booklet explains how these rules apply to the use of other people's ideas and works in student papers and presentations. This booklet also contains definitions and common policies surrounding other common types of misconduct.

Rice decided to prepare this booklet after examining an exemplary handbook written for students at the University of Virginia. We gratefully acknowledge the University of Virginia's generosity in allowing us to imitate the organization and content of their student guide, Academic Fraud and the Honor System. Additional content assistance was also drawn from Wesleyan University's The Blue Book. A Definition of Academic Fraud

On all academic written work done by students at Rice University, the following pledge is either required or implied:

"On my honor, I have neither given nor received any unauthorized aid on this (examination, quiz or paper)."

This statement is regarded as an indication that the student understands and has complied with the requirements of the assignment as set forth by the professor. Any violation of the pledge that

occurs outside of a testing situation is considered academic fraud. There are several types of academic fraud, and they are as follows:

Plagiarism

Plagiarism is defined by the Honor Council as: "quoting, paraphrasing, or otherwise using another's words or ideas as one's own without properly crediting the source." Utilizing AI software to generate ideas and pass them off as one's own will also be considered plagiarism and will be adjudicated as such by the Honor Council. All specifically designated written assignments are conducted under the Honor System. In preparing written work, research and the utilization of

another person's words or ideas is in many cases essential. The Honor Council assumes that, unless otherwise credited, all work submitted by the student is intended to be considered as his or her own work. Any time a student draws particularly or generally from another's work, the source should be properly credited. What is meant by proper crediting is left to the discretion of the professor. A professor, when assigning a paper, should make known to the students what is expected in the research and referencing of the paper. However, it is the student's responsibility to find out from each professor how work for that professor should be credited. Neglect of proper citation shall be considered academic fraud.

Multiple Submission

Multiple submission is the resubmission of any work by a student that has been used in identical or similar form in fulfillment of any academic requirement at this or another institution. Under certain conditions a student may be permitted to rewrite an earlier work or to satisfy two academic requirements by producing a single piece of work, more extensive than that which would satisfy either requirement on its own. In such cases, however, the student must secure prior permission from each instructor involved. If the student has revised an earlier essay, the earlier essay should be submitted with the final version. If a single extended essay has been written for more than one course, the fact must be clearly indicated at the beginning of the essay. Thus, submitting the same work for credit in more than one class, either concurrently or consecutively, without prior permission from the professor shall be considered academic fraud.

False Citation

A false citation is any attribution to, or citation of, a source from which the referenced material was not in fact obtained, including use of a quoted reference from a non-original source while implying reference to the original source. This shall be considered academic fraud.

False Data

False data are data that have been altered or contrived in such a way as to be deliberately misleading. The submission of such data will be considered academic fraud.

AI Usage Guidelines can be found at <https://oit.rice.edu/ai-usage-guidelines> .

CODE OF CONDUCT

The Office of Student Judicial Programs oversees the judicial system and enforces the Code of Student Conduct, which governs the administration of student order and discipline and participates in title IX investigations. The Code of Student Conduct applies to all students, including undergraduate, graduate, and transfer students; those enrolled in professional and Continuing Studies programs; and visiting students, Visiting Post Baccalaureates, second degree students, and auditors, from the time they arrive on campus for orientation until their degree is conferred or they have permanently left Rice. Organizations also are subject to this Code. All enrolled students also are subject to Rice University policies, rules, and regulations.

Alleged violations of university or college rules are handled in accordance with the Code of Student Conduct. Students may appeal decisions as described in the Code of Student Conduct. Rice retains ultimate authority in all matters of discipline and over all actions that affect its educational function or the safety and wellbeing of members of the university community.

The Code of Student Conduct and other related information and resources are located at:

<https://sjp.rice.edu/code-of-student-conduct>

After Rice's grievance process has been exhausted and documented, students may also

pursue an external complaints process.

Important Information available on the online General Announcements:

Academic Probation and Dismissals and Petitions and Appeals

<https://ga.rice.edu/graduate-students/rights-responsibilities/dispute-resolution/>

Title IX Information:

Rice encourages any student who has experienced an incident of sexual, relationship, or other interpersonal violence, harassment or gender discrimination to seek support. There are many options available both on and off campus for all graduate students, regardless of whether the perpetrator was a fellow student, a staff or faculty member, or someone not affiliated with the university.

Students should be aware when seeking support on campus that most employees are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. The therapists at the Rice Counseling Center and the health care providers at Student Health Services are confidential, meaning that Rice will not be informed about the incident if a student discloses to one of these Rice staff members. Rice prioritizes student privacy and safety and only shares disclosed information on a need-to-know basis.

If you are in need of assistance or simply would like to talk to someone, please call Rice Wellbeing and Counseling Center, which includes Title IX Support:

Extension 3311 or (713) 348-3311

Policies, including Sexual Misconduct Policy and Student Code of Conduct, and more information regarding Title IX can be found [here](#).

Wellbeing and Mental Health

The Wellbeing and Counseling Center at Rice University

[The Wellbeing and Counseling Center](#) supports student development and success by providing a good first point of contact for students who want to talk to someone about solutions to their wellbeing and mental health concerns.

[Download Rice's Wellbeing Guide for Graduate Students here.](#)

The Wellbeing and Counseling Center envisions a Rice community in which all persons develop and thrive as individuals; and who strive to create a community of care, respect and integrity for all.

Should you like to speak to someone, but are unsure whom you need to talk to, you can visit the resource matcher page or give them a call 713-348-3311. They will make sure you are matched with the Office that best meets your needs.

The Center for Career Development

The [Center for Career Development \(CCD\)](#) supports graduate students at every stage of their career journey, from identifying professional goals to navigating the job market. CCD services include one-on-one career coaching, resume and CV review, interview preparation, and access to Rice's global alumni and employer network. Graduate students are encouraged to explore programming designed specifically for academic and non-academic career paths.

Log into 12twenty today: [12twenty](#) is your one-stop shop for your personalized career development journey.



HOW CAN THE CCD *help me?*



1:1 APPOINTMENTS

CCD career counselors support all career development needs. Meet virtually or in person—no prep needed. We also have Peer Career Advisors to help you with resume reviews and interview prep.



EMPLOYER EVENTS

Explore the "Events" page in 12twenty for opportunities to meet 100+ employers to discover unique internship and job opportunities, including the CCD Career and Internship Expo.



OWL EDGE EXTERNSHIPS

A short-term job shadowing experience hosted by Rice Alumni, parents, and friends of the university. These experiences are designed to provide first-hand insight into specific professional environments and organizational cultures.



WORKSHOPS

45 minute long sessions, great starting points to learn more about how to craft a resume, network, or how to prepare for an interview.



RESOURCE LIBRARY

24/7 access to customized resources for any career development needs via the "Resource Library" in your 12twenty account.



RICE UNIVERSITY
Center for Career Development

WHY SHOULD I USE *12twenty?*

12twenty is your **one-stop shop** for a personalized career development journey at Rice University. Use 12twenty to:

- **Apply** for internships and full-time positions
- **Schedule** career counseling appointments
- **Register** for workshops and events
- **Access** career research tools

Scan to visit
rice.12twenty.com



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