Annual Program Assessment Report

Program: General Science
Academic Year of Report: 2019
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Section 1: Learning Objective Assessed for this Report

During this assessment period, we continued to collect information about student expectations of the Program and we developed a survey to identify student perspectives on how GS approved courses address the General Science career-focused learning objectives. To make the survey results nationally relevant and useful to students we used the National Association of Colleges and Employers (NACE) career competency verbiage instead of the exact verbiage of the listed General Science objectives.

Continued assessment:

- Address expectations of students entering the General Science Program, for example, timely degree completion.

In progress:

- Emphasize and develop skillsets commonly sought by employers.
  - Apply mathematics and modeling to the analysis and interpretation of quantitative information.
    - NACE competency: Critical Thinking/Problem Solving
  - Communicate knowledge, ideas, and reasoning clearly, effectively, and objectively in both written and oral forms.
    - NACE competency: Orel/Written Communications:
  - Become an actively engaged team member through participation in collaborative work.
    - NACE competencies: Teamwork/Collaboration and Leadership
  - Plan, organize, and prioritize time and coursework for meaningful and timely degree completion.
    - NACE competencies: Professionalism/Work Ethic and Career Management

Section 2: Assessment Activities

Student expectations:

Student expectations are a valuable source of information for guiding changes to program structure. In contrast to many traditional science majors that recruit students as freshmen and sophomores, the General Science Program gains most of its majors during their junior or senior year. At this point, students have identified potential shortcomings and strengths in their educational interests and developed a better understanding of how their education interweaves with their career plans and financial limitations. The students are therefore a valuable source of information for how the program can best serve student needs. To assess student expectations, we continued to use the GS add/drop student survey, which includes several questions that examine why students choose the General Science Major. The combined results were surprisingly consistent with last year's data and can be found in appendix A. Roughly half (48%)

of all students adding the General Science major indicated a well-defined career objective. 38% of GS students indicated an interest in the health fields. CAS provided us with limited data on General Science alumni occupational information (appendix B). It is of note that a significant proportion (22%) of surveyed alumni fall into the "healthcare professional & technical" category, which is roughly consistent with GS students' indicated career interests.

Career Competencies:

We created a graduation survey (appendix C) intended to help students reflect on how their courses and experiential work promote the development of the NACE career competencies. These competencies align with the learning objectives of the General Science Program. Therefore, the survey also serves as an assessment tool allowing us to gauge how the courses approved by the Program address the General Science Learning Objectives. We planned to roll the survey out during winter term for the graduating class of Spring 2020 as part of the commencement enrollment materials. The emergency triggered by the COVID-19 pandemic caused postponements to commencement plan finalization and so we have not yet been permitted to distribute these materials.

Section 3: Actions Taken Based on Assessment Analysis

Student Expectations:

We have not implemented any changes to the program in response to this data. Our data indicate the same trends this year as it did last year so we did not feel that additional changes where necessary at this time. We have, however, stayed the course in last year's changes.

Career Competencies:

We have not implemented any changes to the program in this area because, as stated above, we have not been able to collect the necessary data. This will be part of our assessment plans for next year.

Section 4: Other Efforts to Improve the Student Educational Experience

We are in the approval process for several changes to the Program. The name change proposal we submitted last year was rejected by the CAS Curriculum Committee (CASCC). The CASCC suggested the more fitting name of "Multidisciplinary Science" instead of our proposed "Interdisciplinary Science". Bringing the new name change proposal back to the General Since Advisory Committee provided the opportunity to propose a few additional improvements to the program, including replacing the requirement for MATH 252/247 with a selection of math and CIS courses, aligning the lower division Earth Science sequence requirement with that imposed by the Earth Science department on its own majors, and codifying the upper-division major approved courses. These changes were unanimously approved by the General Science Advisory Committee during the early Fall term of 2019 and approved for submission into course leaf by the Natural Science Divisional Dean of CAS in April 2020.

Section 5: Plans for Next Year

Our main assessment-related goal for next year is to collect date from our new student graduation survey. The intent is to twofold: First, allow us to further assess the structure and value of the program, and second, encourage students to reflect on how the courses they completed within the program promote the development of competencies sought by employers and professional schools.

Appendix A
Data gathered from GS add/drop form between April 3ed 2018 and March 12th, 2020 (n=291)

Responses to the prompt: Why are you changing your major (please select all that apply?) (n=291)

- 44% (127) The major better tracks with the courses I need for my career objectives than my previous major
- 45% (130) The major will allow me to finish my degree sooner than my previous major
- 32% (93) I am more interested in the coursework required for this major than for my previous major
- 23% (66) More of the courses I have already taken apply to this major than to other majors
- 19% (55) The interdisciplinary nature of the major appeals to me
- 17% (50) The major was recommended to me by another advising office
- 4% (11) Other

Career interests (n=171)

- 18% (31) Medical School
- 18% (30) not sure (it is likely that the 120 students who did not fill out this field best fit in the "not sure" category, as this category was added relatively late)
- 12% (20) Physician's Assistant Programs
- 9% (15) Nursing Programs
- 5% (8) Dentistry School and Orthodontics
- 4% (7) Physical Therapy Programs
- 3% (5) Veterinary Medicine Programs
- 3% (5) Optometry School
- 3% (5) Middle/high school science teacher
- 3% (5) Forensic Science
- 2% (3) Pharmacy School
- 1% (2) nutrition/food science

1 orthodontist
1 occupational Therapy
1 naturopathy
1 Radiation therapy
1 healthcare admin
1 medical sales
1 wildlife/conservation
1 physics/geology
1 neuroscience
1 illustration
1 geomorphology
1 fire fighting
1 environmental science
1 Astrobiology
1 Actuary

Offices that referred students to the General Science Program (n=53)

Note: advising conversations suggest that this information is significantly underreported; far more students were likely referred to GS from other advising units than this data suggests.

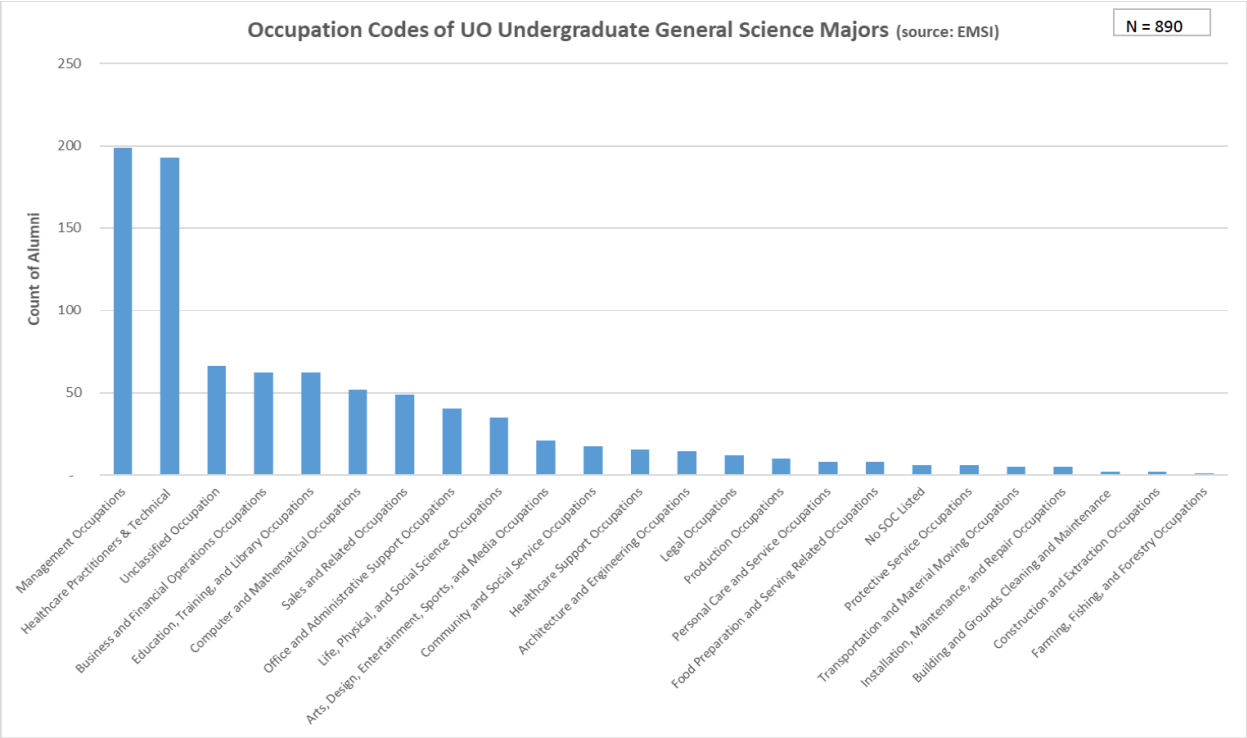
- Health Professions Program Advising (20 students)
- Department of Computer and Information Science Advising Office (9 students)
- Academic Advising (8 students)
- Department of Human Physiology Advising Office (6 students)
- Pathway advising (5 students)
- Center for Multicultural Academic Excellence (3 students)
- Biology Department (1 student)
- Math Department (1 student)

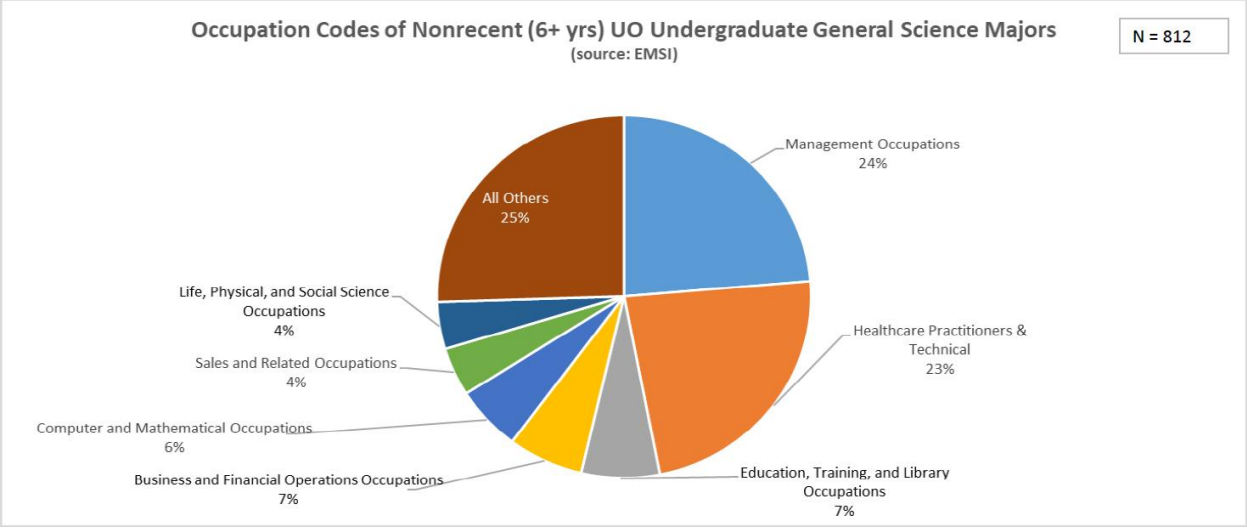
Majors Previous to GS (n=285)

- 28% (80) Human Physiology
- 28% (79) Biology
- 12% (34) Exploring
- 9% (27) Biochemistry/Chemistry
- 8% (23) Computer & Information Science
- 4% (11) Psychology
- 2% (6) Physics
- 2% (5) Pre-Business
- 1% (3) Art
- 1% (3) Economics
- 1% (3) Pre-Education
- 1% (2) Anthropology
- 1% (2) General Social Science
- 1% (2) Mathematics
- 1 English
- 1 Environmental Studies
- 1 Geography
- 1 Journalism
- 1 Sociology

Appendix B

Limited data based on public profiles (LinkedIn, monster.com, et al) of General Science alumni as collected by the EMSI data aggregation firm. The graphs reference occupation codes from the Bureau of Labor Statistics and O*NET (a database containing occupational information).





Appendix C
General Science Graduation Survey

It will likely take more than one hour to fill out this form properly. You will need your degree guide and/or transcript. Thank you!

First Name | Last Name | UO ID # | Date (mm/dd/yyyy)

After which term do you plan to be done with all your coursework?

During which year do you plan to be done with all your coursework?

What are your short-term and long-term career and/or life goals?

Short term career goals (next few years)

Long term career goals

How did you learn about the General Science Major?

Why did you choose the General Science major? select all that apply:

- ☐ The major better tracked with the courses I need for my career objectives than my previous major
- ☐ The major allowed me to finish my degree sooner than my previous major
- ☐ I am more interested in the coursework required for this major than for my previous major
- ☐ When I selected GS, more of the courses I had already taken apply to this major than to other majors
- ☐ The interdisciplinary nature of the major appeals to me
- ☐ Other, please specify below

Other:

Did you switch for GS from another Major, is so which one?

By your estimation, did switching to GS increase, decrease, or not affect your time to degree completion in comparison to your previous major?

- ○ Did not affect time to degree completion
- ○ Increased time to degree completion
- ○ Decreased time to degree completion

If you said it increased of decreased your time to degree completion, than by about how many terms?

Did pursuing the GS major prompt you to take courses in a scientific fields you had not previously considered investigating? Please explain.

Did your GS coursework prompt you to add a minor, major, or certificate that you were not previously considering? If so which one?

Do you want to share any reflections on the General Science Program structure and/or advising?

Please have your degree guide or transcript on hand to help you remember which courses you completed.
Please indicate which courses you completed with a C-/ P or better for the GS major

Lower division requirements (select all that apply):

ANTH

- ☐ ANTH 270
- ☐ ANTH 145
- ☐ ANTH 170
- ☐ ANTH 171
- ☐ ANTH 173
- ☐ ANTH 175
- ☐ ANTH 176
- ☐ ANTH 361
- ☐ ANTH 362
- ☐ Transfer equ

BI

- ☐ BI 211
- ☐ BI 212
- ☐ BI 213
- ☐ BI 214
- ☐ BI 281H
- ☐ BI 282H
- ☐ BI 283H
- ☐ tansfer equ

CH

- ☐ CH 221
- ☐ CH 222
- ☐ CH 223
- ☐ +labs CH
- ☐ 224H CH
- ☐ 225H CH
- ☐ 226H
- ☐ + labs
- ☐ transfer equ

PHYS

- ☐ PHYS 201
- ☐ PHYS 202
- ☐ PHYS 203
- ☐ + labs
- ☐ PHYS 251
- ☐ PHYS 252
- ☐ PHYS 253
- ☐ + lab
- ☐ transfer equ

GEOG

- ☐ GEOG 141
- ☐ GEOG 181
- ☐ GEOG 321
- ☐ GEOG 322
- ☐ GEOG 323
- ☐ GEOG 360
- ☐ GEOG 361
- ☐ trasfer equ

GEOL

- ☐ GEOL 201
- ☐ GEOL 202
- ☐ GEOL 203
- ☐ other
- ☐ transfer equ

CIS

- ☐ CIS 210
- ☐ CIS 211
- ☐ CIS 212
- ☐ transfer equ

Math

- ☐ MATH 252
- ☐ MATH 247
- ☐ tested out
- ☐ transfer equ

Upper division, please list all the upper division courses you have passed with a C- / P or better from below departments (for this purpose they don't have to be only classes approved for the GS major)

ANTH

BI

CH

CIS

GEOG

GEOL

HPHY

MATH

PHYS

PSY

As you move forward into the next chapter of your life and get ready for job interviews and professional programs, it is valuable to reflect on what you have gained from your education. In the natural sciences, we often define our education by the content we learned, the facts we know. This is reflected by the titles of the courses on your transcript: Cell biology, Human Physiology, Calculus II, Organic Chemistry, Biological Anthropology, etc. But this is only one aspect of what you have gained, and arguably not the most important. After all, a lot of the knowledge you need for your career you learn on the job and a growth mindset dictates that what we know is not static but continues to evolve as our life trajectory changes.

Equally important to success are the competencies you have developed, what you have learned to do. Competencies are not readily apparent on your transcript, and they are not often explicitly emphasized in courses, but they are of vital importance to employers and to maintaining a growth mindset. If you can express how your education has allowed you to develop the competencies employers want, you will have a substantial advantage in interviews, on entrance essays, and when writing your resume. So, what are the competencies that employers want, and how have your classes helped you develop them?

Many, many, online sites discuss career competencies, sometimes referred to as Job Skills. These are generally expressed as variations on the same major themes. We will focus on the National Association of Colleges and Employers (NACE) Career Readiness Competencies. According to a 2019 survey of 172 employers, the competencies that employers' rate as most essential for career readiness are:

1. Critical thinking/problem solving (4.66)
2. Teamwork/collaboration (4.48)
3. Professionalism/work ethic (4.41)
4. Oral/written communications (4.30)
5. Digital technology (3.84)
6. Leadership (3.65)
7. Career management (3.38)
8. Global/multi-cultural fluency (2.78)

5-point scale, where 1=Not essential, 2=Not very essential, 3=Somewhat essential, 4=essential, 5=Absolutely essential

In the next set of questions, you will be asked to identify courses that where structured in a way that supported development of each of these competencies. The intent of this exercise is twofold.

1. To help you reflect on how your courses have allowed you to develop these competencies
2. To assess how the courses approved by the General Science Program address these competencies.

This information will be used in our annual program assessment and will inform future programmatic changes.
You might find that particularly difficult or frustrating courses developed these competencies more than easier courses.
Remember to consider experiential learning like research, internships, peer advising, tutoring, team sports, previous jobs, and volunteer work. These experiences develop many of the below competencies, depending on the parameters of your experience.

Critical Thinking/Problem Solving: Exercise sound reasoning to analyze issues, make decisions, and overcome problems. The individual is able to obtain, interpret, and use knowledge, facts, and data in this process, and may demonstrate originality and inventiveness.

Classes that develop this competency might have the following features:
- develop quantitative reasoning skills like math, physics, chemistry, various stats classes
- directly focus on critical thinking, argumentation, and/or debate
- require the formulation of a research proposal of some sort
- encouraged you to analyze the merits and shortcomings of literature (primary or otherwise)
- lab classes that encourage you to think through the experiments, not just follow a protocol

Which classes developed this competency (and why)

Lower division GS courses:	Upper division GS courses:	Core Ed and elective:	Experiential:

Teamwork/Collaboration: Build collaborative relationships with colleagues and customers representing diverse cultures, races, ages, genders, religions, lifestyles, and viewpoints. The individual is able to work within a team structure, and can negotiate and manage conflict.

Classes that develop this competency might have the following features:
- lots of group projects, or a few larger group projects
- require out of class collaboration. Classes for which you had to form strong study groups.

Experiential learning that could be particularly relevant: Team sports, research, internships, relevant work experiences

Which classes developed this competency (and why)

Lower division GS courses:	Upper division GS courses:	Core Ed and elective:	Experiential:

Professionalism/Work Ethic: Demonstrate personal accountability and effective work habits, e.g., punctuality, working productively with others, and time workload management, and understand the impact of non-verbal communication on professional work image. The individual demonstrates integrity and ethical behavior, acts responsibly with the interests of the larger community in mind, and is able to learn from his/her mistakes.

Classes that develop this competency might have the following features:
- Particularly challenging courses
- Courses that required a lot of communication with the instructor
- Alternatively, courses where you felt you needed to be your own guide in some sense because of loosely defined expectations.
- Courses that interface with the public in some way
- Courses where you might have had to manage conflict with either other students or the instructor.

Experiential learning that could be particularly relevant: In a more general sense this competency is developed during terms when you might have taken an excessive number of credits, or had to manage your schedule to work while taking classes. Previous employment can be particularly relevant if you can communicate how it helped you develop the above.

Which classes developed this competency (and why)

Lower division GS courses:	Upper division GS courses:	Core Ed and elective:	Experiential:

Oral/Written Communications: Articulate thoughts and ideas clearly and effectively in written and oral forms to persons inside and outside of the organization. The individual has public speaking skills; is able to express ideas to others; and can write/edit memos, letters, and complex technical reports clearly and effectively.

Classes that develop this competency might have the following features:
- have presentation projects, on which you receive feedback.
- have lots of writing assignments, in which you receive feedback.
- require lots of groupwork wherein you must articulate your thoughts to the group.
- Classes for which you found yourself participating substantially during, or outside of, class.

Which classes developed this competency (and why)

Lower division GS courses:	Upper division GS courses:	Core Ed and elective:	Experiential:

Digital Technology: Leverage existing digital technologies ethically and efficiently to solve problems, complete tasks, and accomplish goals. The individual demonstrates effective adaptability to new and emerging technologies.

Classes that develop this competency might have the following features:
- Online courses, in some cases
- Courses that required you to learn a new program
- Courses specifically focused on this competency

Which classes developed this competency (and why)

Lower division GS courses:	Upper division GS courses:	Core Ed and elective:	Experiential:

Leadership: Leverage the strengths of others to achieve common goals, and use interpersonal skills to coach and develop others. The individual is able to assess and manage his/her emotions and those of others; use empathetic skills to guide and motivate; and organize, prioritize, and delegate work.

Classes that develop this competency might have the following features:
- classes that have lots of group projects for which you have had to take the lead.

Experiential learning that could be particularly relevant: Team sports, or any situation in which you took on a leadership role.

Which classes developed this competency (and why)

Lower division GS courses:	Upper division GS courses:	Core Ed and elective:	Experiential:

Career Management: Identify and articulate one's skills, strengths, knowledge, and experiences relevant to the position desired and career goals, and identify areas necessary for professional growth. The individual is able to navigate and explore job options, understands and can take the steps necessary to pursue opportunities, and understands how to self-advocate for opportunities in the workplace.

Classes that develop this competency might have the following features:
- Courses that have a specific focus on career readiness or a disciplines relationship to relevant careers

Experiential learning that could be particularly relevant: Internships, research, volunteer work, other employment.

Which classes developed this competency (and why)

Lower division GS courses:	Upper division GS courses:	Core Ed and elective:	Experiential:

Global/Intercultural Fluency: Value, respect, and learn from diverse cultures, races, ages, genders, sexual orientations, and religions. The individual demonstrates, openness, inclusiveness, sensitivity, and the ability to interact respectfully with all people and understand individuals' differences.

Classes that develop this competency might have the following features:
- Multicultural Core Education courses are designed to develop this competency
- Courses that include a specific focus on equity and inclusion issues, even if this is not the main focus of the entire course.
- Courses with an emphasis on other cultures or value systems.

Experiential learning that could be particularly relevant: International internships or study abroad.

Which classes developed this competency (and why)

Lower division GS courses:	Upper division GS courses:	Core Ed and elective:	Experiential:

We are really interested in knowing what wonderful and exciting things our majors end up doing. To this end, we would like to contact you in a year or two for the sole purpose of asking where your path has led. If this is acceptable please provide us with a phone number and/or email address that we could use to reach you.

Thank you for completing this form. Please save your changes and email the completed form to either gensci@uoregon.edu or jprikryl@uoregon.edu by May 15th 2020.