Program: General Science
Academic Year of Report: 2020
Program Contact Person for Assessment: Jana Prikryl, jprikryl@uoregon.edu

Section 1: Item Assessed for this Report.

Because of the SARS CoV-2 pandemic, we have modified our assessment goals to minimize hurdles for General Science students and to assess the effects of recent advising changes to the major. During the last year, the General Science (GS) major has transitioned advising responsibilities to the Tykeson Healthy Communities Flight Path advisors. This change has significantly increased advising capacity and allowed us to imagine how the flexibility of the GS major might enhance our students' academic path if they find the major earlier during their time at UO. During this assessment period, we focused on how students, particularly freshmen and sophomores, identify the major and whether they have met with Tykeson advisors. We plan to use this year's data as a first data point from which to track changes in when students add the major and how they are advised to do so.

To collect data, and to make the change-of-major process more convenient during remote learning, we have designed a new online change of major form that includes questions about each student's career aspirations and reasons for changing their major (which were found on the previous paper form), as well as new questions about their class standing and knowledge of advising opportunities. As we continue to track this data we hope to see increases in early adds allowing students to take full advantage of the opportunity GS provides to get a solid background in a diverse range of natural science content while maintaining the flexibility to pursue extracurricular opportunities that enhance their UO experience.

While we continue to make our end-of-degree survey available to students who would like to use it as a reflection on how their courses relate to one another and NACE defined career competencies, we have not required or even encouraged students to complete this survey this year. We made this decision to lessen demands on students' time during this unprecedented period.

New assessment:
- Determine students' class standing when they enter the program, how it relates to their advising background, and how they learned about the major.

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

On hiatus during SARS CoV-2 Pandemic:
- 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 has historically gained 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. This year we have moved the change of major form to an online format so that it is more easily accessible to students off-campus, and we have added new questions to point students towards Tykeson advising and to determine at what point in their academic career students choose to enter the major.

In the last year we have had 172 students fill out the change of major form, 51 of which filled out the old paper version, 121 filled out the online version (which became active ~6 months ago), and of those 10 entries were duplicates. 6 of the online entries were requests to drop the major, the rest were add-major requests. We will focus on the data generated from the online form for this assessment.

On average, students add the major after they completed 120 credits (mid-Junior standing), which matches our observations from advising appointments over the last six years. The online form includes the new question: "How many university credits have you already completed (including UO, transfer, AP, and IB credit)." Allowing us to assess the self-reported class standing of entering majors. Of the 105 students that added the major, 12% are freshmen, 17% are Sophomores, 34% are Juniors, 43% are seniors, with 13% having over 180 credits completed. We are particularly interested in how these percentages will change into the future.

Our new collaboration with Tykeson provides advising resources that make it possible to recruit students into the program earlier in their academic careers so that they can make full use of the additional flexibility the program offers. The number of new GS students whose previous major was "Exploring" has increased modestly over the past year, from 12% to 16%. Tykeson and other advising resources deserve credit for this increase because they have allowed us to reach a broad range of students early in their academic careers and inform students about the major if it makes sense for their academic and career goals. We have also added the question: "Have you met with an advisor to discuss General Science major requirements? Major advising for General Science is done by the Tykeson Healthy Communities Flight Path Advisors." 59% of all adds (all class ranks) indicated that they had met with a Tykeson Healthy communities Plight Path Advisor, 19% said they met with a different advisor, and only 18% indicated they had not yet met with an advisor.

71% of freshman and sophomores who added GS indicated that they had already met with an advisor. We asked freshman and sophomores how they learned about the program; 25% said they learned about it from a friend, 18% said they learned about it from online resources, 57% learned about it from Tykeson and pathway advisors. Of the Juniors who answered the same question, 27% said they learned about the major from a friend, 12% said online, and 64% said through advising (again, mostly Tykeson and pathway advising). Students who added the GS major in their senior year heard about the program in the following distribution: from friends (31%), online sources (10%), and advising (54%). Interestingly the advising offices directing seniors to the GS program are much more diverse, including CMAE, international affairs, departmental advising, and OAA. This could indicate that many advising offices still view the GS program primarily as a safety net for students struggling with their previous major. As a result, these offices might be more likely to direct students to General Science as an alternative path to completion later in their academic career instead of a flexible best option for an interdisciplinary STEM education early in their academic career.

The results regarding motivations for switching to GS were once again consistent with the previous two years data and can be found in appendix A. Roughly 72% of all students adding the General Science major indicated a defined career objective, this is an improvement over last year where less than half (48%) had defined career objectives. We saw a modest increase in the number of students interested in the health professions, from 38% to about 54%. Last year, 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.

Career Competencies:
Last year, 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 us to hold off on this process until we are back to a place of stability.

Section 3: Actions Taken Based on Assessment Analysis

Student Expectations:
We will be rolling out the new Program name "Multidisciplinary Science" and changes that will increase flexibility and accessibility of the major. When we send out communication about these changes, we will also remind advising units of the benefits of adding the GS (will be MSCI) major early in one's academic career. We will provide MSCI 4-year plans that prepare students for some of the professions MSCI is well suited to (like many health professions).
We will also continue using the new survey data to track how effective advising is at informing exploring and early academic career students about the major.

Career Competencies:
We have not implemented any changes to the program in this area because, as stated above, we have decided not to collect the necessary data during the academic emergency. We will start collecting this data again after the academic emergency is over.

Section 4: Other Efforts to Improve the Student Educational Experience

We have just completed the approval process for several changes to the program which will make the program more accessible and better reflect the design of the program. These changes were unanimously approved by the General Science Advisory Committee in the early Fall term of 2019, approved for submission into course leaf by the Natural Science Divisional Dean of CAS in April 2020, and were approved by the UO Senate in the Winter curriculum report in 2021. A large project over the next year will include updating advising materials, the website, and other program content and informing other units of the changes.

Section 5: Assessment Plans for Next Year

It is hard to plan for next year without knowing how the pandemic will continue to affect operations, but our aspirational goal for next year is to collect data from our new student graduation survey. The intent is twofold: First, allow us to 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.
We will also continue to monitor changes in when students decide to add the GS major and from where they are learning about the program.

Appendix A
Data gathered from new online GS add/drop form October 5ᵗʰ 2020 - May 18ᵗʰ, 2021 (n=105)

Rank at time of add:	Met with advisor	How student learned about GS
▪ Freshman: 12%	Not yet: 33% Tykeson: 44% Other advisor: 22%	Online: 11% Friend: 11% Advising: 78%
▪ Sophomore: 17%	Not yet: 28% Tykeson: 67% Other advisor: 6%	Online: 22% Friend: 28% Advising: 44%
▪ Junior: 34%	Not yet: 15% Tykeson: 61% Other advisor: 24%	Online: 9% Friend: 27% Advising: 64%
▪ Senior: 43%	Not yet: 18% Tykeson: 63% Other advisor: 20%	Online: 10% Friend: 30% Advising: 55%
○ 13% > 180cr	Not yet: 33% Tykeson: 42% Other advisor: 25%	Online: 8% Friend: 33% Advising: 59%

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

▪ The major better tracks with the courses I need for my career objectives than my previous major.
  - 61% (64) up 17% over last year

▪ The major will allow me to finish my degree sooner than my previous major.
  - 48% (50) up 3% over last year:

▪ I am more interested in the coursework required for this major than for my previous major.
  - 50% (53) up 18% over last year

▪ More of the courses I have already taken apply to this major than to other majors.
  - 45% (47) up 22% over last year

▪ The interdisciplinary nature of the major appeals to me.
  - 32% (34) up 13% over last year

▪ The major was recommended to me by another advising office.
  - 26% (27) up 9% over last year

▪ Other   -   4% (4) same as last year
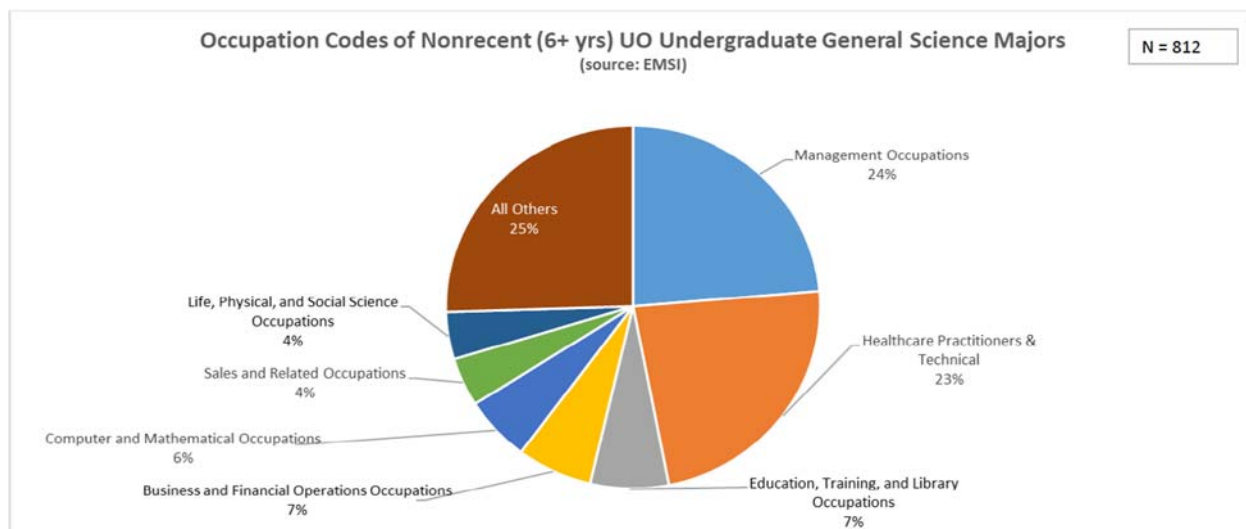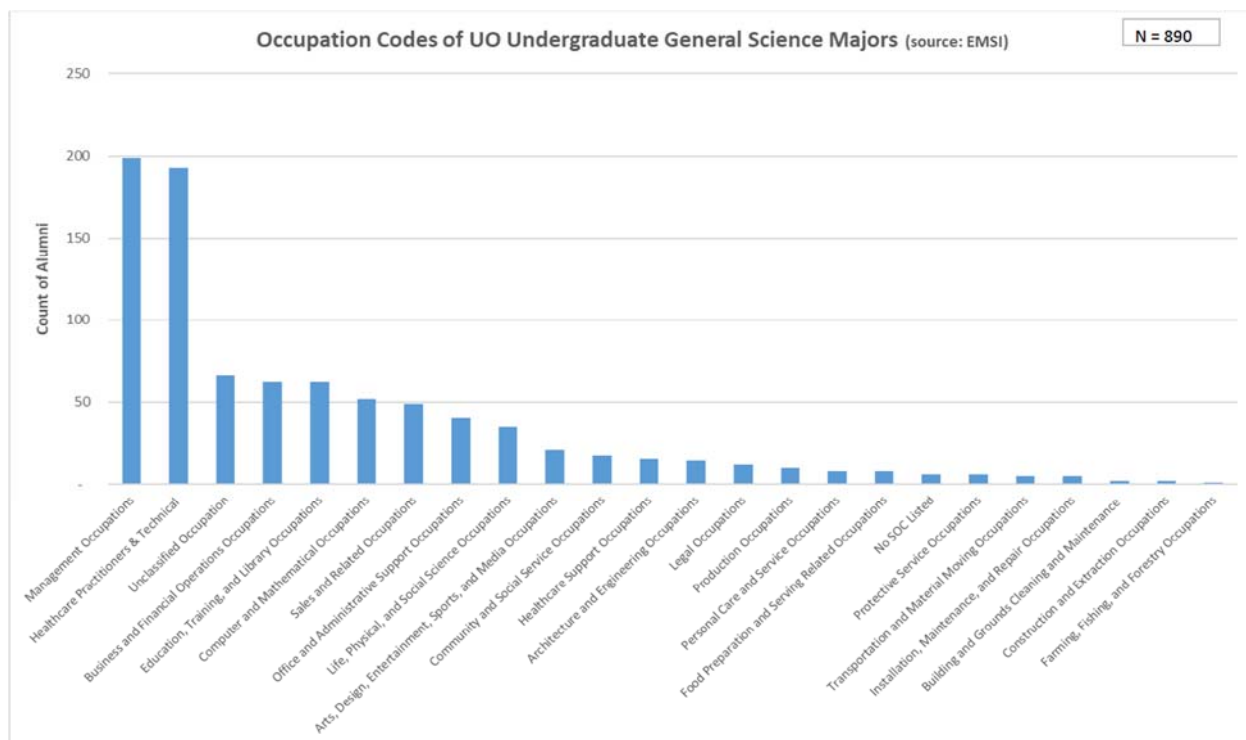
Career interests

- 28% (29) not sure
- 24% (25) medical school
- 10% (11) nursing programs
- 4% (5) physical therapy programs
- 4% (4) computer science /programing
- 4% (4) dentistry school and orthodontics
- 4% (4) grad programs
- 3% (3) forensic science
- 3% (3) veterinary medicine programs
- 3% (3) physician's assistant programs
- 2% (2) optometry school
- 2% (2) middle/high school science teacher
- 2% (2) pharmacy school
- 2% (2) public health
- 2% (2) occupational therapy

Majors Previous to GS

- 28% (29) Human Physiology
- 27% (28) Biology/Marine Biology
- 16% (17) Exploring
- 10% (10) Biochemistry/Chemistry
- 4% (4) Computer & Information Science
- 3% (3) Pre-Business
- 2% (2) Physics
- 2% (2) Economics
- 1 Anthropology
- 1 Earth Science
- 1 Education
- 1 Environmental Studies
- 1 Mathematics
- 1 Neuroscience
- 1 Political Science
- 1 Spanish

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).

Occupation Codes of UO Undergraduate General Science Majors (source: EMSI) — N = 890

Occupation Codes of Nonrecent (6+ yrs) UO Undergraduate General Science Majors (source: EMSI) — N = 812

- Management Occupations 24%
- Healthcare Practitioners & Technical 23%
- Education, Training, and Library Occupations 7%
- Business and Financial Operations Occupations 7%
- Computer and Mathematical Occupations 6%
- Sales and Related Occupations 4%
- Life, Physical, and Social Science Occupations 4%
- All Others 25%

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	BI	CH	PHYS
☐ ANTH 270	☐ BI 211	☐ CH 221	☐ PHYS 201
☐ ANTH 145	☐ BI 212	☐ CH 222	☐ PHYS 202
☐ ANTH 170	☐ BI 213	☐ CH 223	☐ PHYS 203
☐ ANTH 171	☐ BI 214	☐ +labs CH	☐ + labs
☐ ANTH 173	☐ BI 281H	☐ 224H CH	☐ PHYS 251
☐ ANTH 175	☐ BI 282H	☐ 225H CH	☐ PHYS 252
☐ ANTH 176	☐ BI 283H	☐ 226H	☐ PHYS 253
☐ ANTH 361	☐ tansfer equ	☐ + labs	☐ + lab
☐ ANTH 362		☐ transfer equ	☐ transfer equ
☐ Transfer equ			

GEOG	GEOL	CIS	Math
☐ GEOG 141	☐ GEOL 201	☐ CIS 210	☐ MATH 252
☐ GEOG 181	☐ GEOL 202	☐ CIS 211	☐ MATH 247
☐ GEOG 321	☐ GEOL 203	☐ CIS 212	☐ tested out
☐ GEOG 322	☐ other	☐ transfer equ	☐ transfer equ
☐ GEOG 323	☐ transfer equ		
☐ GEOG 360			
☐ GEOG 361			
☐ trasfer 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.