Multidisciplinary Science

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A multidisciplinary science major allows students to design their own program of study in the natural sciences. Students choose their areas of specialization from a broad range of sciences, tailoring their studies to their specific interests and career goals.

The multidisciplinary science major is useful to students whose interests do not fit well within a single scientific field, as well as students who wish to pursue advanced degrees in health-related fields.

Multidisciplinary Science is different from traditional majors in that it pulls coursework from multiple STEM departments to provide students with a self-guided interdisciplinary education. Unlike many STEM majors, most MSCI students add the major during their junior or senior year. Assessment models that rely on learning outcomes based on the content of specific coursework and subdivided into yearly educational benchmarks are therefore not appropriate for the Multidisciplinary Science Program. Instead, the MSCI program outcomes are tied to its structure, which is designed to:

- Provide students with interdisciplinary curricular choices that develop competencies important for all STEM fields.
- Emphasize and develop skillsets commonly sought by employers.
- Address expectations of students entering the Multidisciplinary Science Program, for example timely degree completion.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Develop a personalized plan for timely degree completion in the MSCI program by thoughtfully selecting coursework from multiple STEM departments, taking into account the unique structure of the program and individual academic goals.
- Analyze and articulate connections between chosen STEM disciplines and their applications to career objectives.
- Explain the steps and limitations of the scientific methodology and apply this knowledge to critically evaluate scientific information as presented by popular and professional sources.
- Articulate how the MSCI coursework develops skills that are highly valued by employers, such as critical thinking, problem solving, work ethic, collaboration, effective communication, and analysis and interpretation of quantitative information.

Multidisciplinary Science Major Requirements

С	ode	Title	Credits	
Lower Division MATH/CS Requirement ¹		8		
	MATH 251	Calculus I		
	or MATH 24/Calculus for the Biological Sciences I			
	Select one of	the following		

	CS 122	Introduction to Programming and Problem Solving	
	MATH 231	Elements of Discrete Mathematics I	
	STAT 243Z	Elementary Statistics I	
	MATH 247	Calculus for the Biological Sciences II	
	MATH 252	Calculus II	
	MATH 425	Statistical Methods I (Students who complete MATH 425 as part of the math requirement, cannot also use this same class towards the 32 credits of upper- division Multidisciplinary Science major requirements.)	
I	Foundations Co	ourses	36-48
-	Select 3 sequend	ces or 3-course combinations from the	
1	following; 2 sequ	iences must include labs, "	
1	Anthropology: Ap	oplies as a non-lab course combination	
	ANTH 270	Introduction to Biological Anthropology (Required for ANTH course combination)	
	Select two of	the following:	
	ANTH 145	Principles of Archaeology	
	ANTH 170	Introduction to Human Origins	
	ANTH 171	Introduction to Monkeys and Apes	
	ANTH 173	Evolution of Human Sexuality	
	ANTH 175	Evolutionary Medicine	
	ANTH 176	Introduction to Forensic Anthropology	
	ANTH 361	Human Evolution	
	ANTH 362	Human Biological Variation	
1	Biology: Applies	as a lab sequence	
	BI 211–214	General Biology I-IV (choose three: BI 211, BI 212, and either BI 213 or BI 214)	
	or BI 281H 283H	– Honors Biology I-III	
(Chemistry: Can a sequence	apply as either a lab sequence or a non-lab	
	Select one of	the following:	
	CH 221–223	General Chemistry	
	& CH 227– 229	and General Chemistry Laboratory	
	CH 224H-	Honors General Chemistry	
	& CH 237– 239	Laboratory	
(Computer Science	ce: Applies as a lab sequence	
	CS 210–212	Computer Science I-III	
ì	Earth Sciences:	Applies as a lab sequence	
	ERTH 201	Dynamic Planet Earth (OR ERTH 101 with	
		a mid-B or better grade)	
	EKTH 202	ERTH 102 with a mid-B or better grade)	
	ERTH 203	History of Life (OR ERTH 103 with a mid-B	
	• • • • •	or better grade)	
(eography: App	lies as a non-lab course combination	
	GEOG 141	The Natural Environment (Required for GEOG course combination)	
	Select two of t	the following:	

GEOG 181 Our Digital Earth		
GEOG 321	Climatology	
GEOG 322	Geomorphology	
GEOG 323	Biogeography	
GEOG 360	Watershed Science and Policy	
GEOG 361	Global Environmental Change	
Physics: Can ap	oply as a lab sequence or a non-lab sequence	
Select one of	the following:	
PHYS 201– 203 & PHYS 204- 206	General Physics and Introductory Physics Laboratory -	
PHYS 251– 253 & PHYS 290	Foundations of Physics I and Foundations of Physics Laboratory (must take all 3 terms of PHYS 290 for this to count as a lab sequence)	
Upper Division	32 credits of approved upper-division courses from the below departments ⁴	32
BI, CH, CS, ERTH, HPHY, MATH, PHYS, and PSY	Upper-division courses from these departments are approved for the major.	
ANTH	Upper-division ANTH courses from the list below. Experimental courses (410) require program approval.	
GEOG	Upper-division GEOG courses from the list below. Experimental courses (410) require program approval.	
Emphasis areas	At least twelve graded credits (not P/NP) must be in one department and at least twelve graded credits must be in a second department. We strongly encourage students to take all majors classes for a grade.	
401-409	4 of the 32 credits may be research (401), thesis (403), or supervised college teaching (402) credits. Seminar, Readings & Conference, Practicum, Internship, and Tutorial credits (404-409) may not be used for the Multidisciplinary Science major.	
Double Major	rs upper division credits used for another major may not be used to satisfy MSCI requirements.	
Minors in related fields	There is no MSCI imposed restriction on course overlap between the MSCI major and any minor (though the department offering the minor might have restrictions). We encourage you to look into minors in your emphasis areas.	

All students are subject to all prerequisites,
minimum grade requirements, and
registration restrictions set by each
department for its own courses. These
things cannot be circumvented because
one is a MSCI major. Please investigate
the prerequisites and restrictions for the
courses you are interested in taking early
on.

Total Credits

76-88

- ¹ All students must demonstrate a proficiency in mathematics by passing calculus I and one additional math or computer science class from the provided list. All courses must be completed with grades of C- or P (pass) or better
- ² All students must take three course sequences (or three course combinations in the case of ANTH and GEOG) from the provided list, two of which must include laboratories. The labs might be embedded in the class (as with BI, CS, and GEOL), or taken as separate courses (as with CH and PHYS). All courses must be completed with grades of C- or P (pass) or better, except ERTH 101-103 which must be completed with grades of mid-B or better.
- ³ If an upper-division course is used towards the Foundations requirements, the same course cannot also be used to satisfy the other upper-division MSCI requirements.
- ⁴ All courses must be completed with grades of C- or P or better. All upper division emphasis area courses must be taken for a letter grade.

Additional Requirements

At least 24 upper-division credits must be taken at the University of Oregon.

Approved Courses

Code	Title	Credits
Anthropology		
ANTH 332	Human Attraction and Mating Strategies	4
ANTH 341	Food Origins	4
ANTH 349	Origins of Art	4
ANTH 361	Human Evolution	4
ANTH 362	Human Biological Variation	4
ANTH 366	Human Osteology Laboratory	4
ANTH 369	Human Growth and Development	4
ANTH 376	Decoding Your Genome	4
ANTH 442	Northwest Coast Archaeology	4
ANTH 443	North American Archaeology	4
ANTH 446	Practical Archaeobotany	4
ANTH 456	Peopling of the Americas	4
ANTH 459	Advanced Evolutionary Medicine	4
ANTH 462	Primate Evolution	4
ANTH 463	Primate Behavior	4
ANTH 467	Paleoecology and Human Evolution	4
ANTH 468	Evolutionary Theory	4
ANTH 470	Statistical Analysis of Biological Anthropology	4
ANTH 471	Zooarchaeology: [Topic]	4
ANTH 472	Primate Conservation Biology	4

ANTH 473	Advanced Forensic Anthropology	4
ANTH 474	Human Skeletal Pathology	4
ANTH 479	Taphonomy: Bones, Bugs, and Burials	4
ANTH 481	Principles of Evolutionary Psychology	4
ANTH 487	Bioanthropology Methods	4
Geography		
GEOG 321	Climatology	4
GEOG 322	Geomorphology	4
GEOG 323	Biogeography	4
GEOG 341	Population and Environment	4
GEOG 342	Geography of Globalization	4
GEOG 343	Society, Culture, and Place	4
GEOG 360	Watershed Science and Policy	4
GEOG 361	Global Environmental Change	4
GEOG 425	Hydrology and Water Resources	4
GEOG 427	Fluvial Geomorphology	4
GEOG 430	Long-Term Environmental Change	4
GEOG 433	Fire and Natural Disturbances	4
GEOG 481	GIScience I	4
GEOG 482	GIScience II	4
GEOG 485	Remote Sensing I	4
GEOG 486	Remote Sensing II	4
GEOG 491	Advanced Geographic Information Systems	4
GEOG 493	Advanced Cartography	4
GEOG 494	Spatial Analysis	4
GEOG 495	Geographic Data Analysis	4
GEOG 497	Qualitative Methods in Geography	4

Multidisciplinary science courses must be completed with grades of C– or P (pass) or better. Courses graded N (no pass) or F may be repeated for credit, in accordance with university policy.

The upper-division requirements are for students who declared the multidisciplinary science major fall 2000 or later. Students who declared the major before fall 2000 follow the requirements that were in effect when they declared the major. Upper-division credits used to satisfy minimum requirements of another major may not be used to satisfy upper-division requirements in multidisciplinary science. At least 24 upper-division science credits must be completed at the University of Oregon to meet the multidisciplinary science residency requirement.

Upper-division courses may be selected from the multidisciplinary science website (http://gensci.uoregon.edu/).

Honors Program

Students preparing to graduate with honors in multidisciplinary science should notify the program director no later than the first term of the senior year.

Honors in multidisciplinary science centers on a thesis, which is the culmination of research conducted under the direction of a faculty advisor. The advisor does not need to be a member of the Multidisciplinary Science Committee.

To graduate with honors, students must have at least a 3.50 overall grade point average and an average GPA of 3.50 or better in all classes counting towards the multidisciplinary science major. In addition, they must complete 6 credits (or equivalent experience pre-approved by MSCI

Director) of Research (401) or Thesis (403) or both in an appropriate department. These credits must be distributed over at least two terms and cannot be used to fulfill emphasis-area requirements.

Upon approval of the thesis by the advisor and the program director, honors in multidisciplinary science are awarded.

For guidelines and calendar, contact the Multidisciplinary Science Program Director.

Four-Year Degree Plan

The degree plan shown is only a sample of how students may complete their degrees in four years. There are alternative ways. Students should consult their advisor to determine the best path for them.

Bachelor of Science in Multidisciplinary Science with Education Focus

Course	Title	Credits Milestone
First Year		
Fall		
CH 111	Introduction to Chemical Principles	4
MATH 111Z	Precalculus I: Functions	4
WR 121Z	Composition I	4
Core-educatio	on course	4
	Credits	16
Winter		
MATH 112Z	Precalculus II: Trigonometry	4
WR 122Z	Composition II	4
or WR 123	or College Composition III	
BI 211	General Biology I: Cells	5
Core-education requirement	on course that also satisfies multicultural	4
	Credits	17
Spring		
BI 212	General Biology II: Organisms	5
MATH 251	Calculus I	4
Core-educatio	on course that also satisfies multicultural	4
requirement		
Core-educatio	on course	4
	Credits	17
Second Year		
Fall		
BI 213	General Biology III: Ecology and	5
or BI 214	Evolution	
	or General Biology IV: Biochemistry	
	and Genetics	
CH 221	General Chemistry I	4
	or General Physics	
PH13 201		0
CH 227	or Introductory Physics Laboratory	2
PHYS 204	of introductory i hysics Eaboratory	
Core-educatio	on course	4
	Credits	15

Winter

CH 222 or PHYS 202	General Chemistry II or General Physics	4
CH 228 or PHYS 205	General Chemistry Laboratory or Introductory Physics Laboratory	2
MATH 252	Calculus II	4
Core-educatio	on course	4
	Credits	14
Spring		
CH 223 or PHYS 203	General Chemistry III or General Physics	4
CH 229 or PHYS 206	General Chemistry Laboratory or Introductory Physics Laboratory	2
STAT 243Z or MATH 425	Elementary Statistics I or Statistical Methods I	4
Core-education	on course	4
Third Year Fall	Credits	14
ERTH 101 or ERTH 201	Exploring Planet Earth (completed with a letter grade of mid-B or higher) or Dynamic Planet Earth	4
CH 331	Organic Chemistry I	4
Core-education	on course	4
Elective cours	e	4
	Credits	16
Winter		
ERTH 102 or ERTH 202	Exploring Earth's Environment (completed with a letter grade of mid-B or higher) or Earth's Surface and Environment	4
CH 335	Organic Chemistry II	4
Elective cours	ses	8
	Credits	16
Spring		
ERTH 103 or ERTH 203	Exploring Earth History (completed with a letter grade of mid-B or higher) or History of Life	4
CH 336	Organic Chemistry III	4
Upper-divisior	n elective courses	8
	Credits	16
Fourth Year		
Fall		
Upper-divisior	n earth science course	4
Upper-divisior	n mathematics or elective course	4
Upper-divisior	n elective courses	8
	Credits	16
Winter		
Upper-division	hiology course	4
	i biology course	

Upper-division elective courses	8
Credits	16
Spring	
Upper-division biology course	4
Upper-division earth science course	4
Upper-division elective course	4
Credits	12
Total Credits	185

Bachelor of Science in Multidisciplinary Science with Pre-Medical Focus

Course First Year Fall	Title	Credits Milestones
CH 111	Introduction to Chemical Principles	4
MATH 111Z	Precalculus I: Functions	4
WR 121Z	Composition I	4
Core-educatio	n course	4
Winter	Credits	16
WR 122Z or WR 123	Composition II or College Composition III	4
MATH 112Z	Precalculus II: Trigonometry	4
CH 221	General Chemistry I	4
CH 227	General Chemistry Laboratory	2
Spring	Credits	14
CH 222	General Chemistry II	4
CH 228	General Chemistry Laboratory	2
MATH 251	Calculus I	4
Or MATH 246	or Calculus for the Biological	
MATH 246	Sciences i	4
Core-educatio		4
Second Year Fall	Creans	14
BI 211	General Biology I: Cells	5
CH 223	General Chemistry III	4
CH 229	General Chemistry Laboratory	2
Core-educatio requirement	n course that also satisfies multicultural	4
Winter	Credits	15
BI 212	General Biology II: Organisms	5
MATH 252 or MATH 247	Calculus II or Calculus for the Biological Sciences II	4
Core-educatio requirement	n course that also satisfies multicultural	4
Core-educatio	on course	4
	Credits	17

Spring		
BI 214	General Biology IV: Biochemistry and Genetics	5
STAT 243Z	Elementary Statistics I	4
or	or Statistical Methods I	
MATH 425		
Upper-divisior	n core-education course	4
Core-educatio	on course	4
	Credits	17
Third Year		
Fall		
BI 320	Molecular Genetics	4
CH 331	Organic Chemistry I	4
CH 337	Organic Chemistry Laboratory	3
Upper-divisior	n core-education course	4
	Credits	15
Winter		
CH 335	Organic Chemistry II	4
CH 338	Organic Chemistry Laboratory	3
BI 358	Investigations in Medical Physiology	4
Upper-divisior	n elective course	4
	Credits	15
Spring		
PSY 201Z	Introduction to Psychology I	4
or	or Introduction to Psychology II	
PSY 202Z	or Biopsychology	
or		
PSY 304		
SOC 204	Introduction to Sociology	4
SOC 207	of Social mequality	
CH 336	Organic Chemistry III	4
Linner-division	biology course	
	Crodite	4
Fourth Voor	Creatis	10
Fourth Tear		
	Conoral Physica	1
		4
CH 260	Physical Biochemistry	2
or CH 461	or Biochemistry	4
Upper-division	a biology or elective course	4
	Credits	14
Winter	oreans	14
	General Physics	1
PHYS 205	Introductory Physics Laboratory	
CH 463	Biochemistry	2
Linner, division		4
opper-uivisior	Credite	0
Corine	Gredits	16
	Conorol Physics	
	General Physics	4
PHIS 206	introductory Physics Laboratory	2

CH 462

Biochemistry

4

Upper-division elective course	
Credits	14
Total Credits	183