

Courses	Title	Credits	Prerequisites	Semester(s) Offered
<b>Agriculture and Resource Economics</b>				
AREC 330	Data-Driven Ag and Res Econ Decision Making	3	AREC 203; STAT 201 or 204 or 301 or 307 or 311 or 315 ECON 204; STAT 201 or 204 or 301 or 307 or 311 or 315; MATH 141	S
AREC 335	Introduction to Econometrics	3	or 155 or 160	F, S
AREC 340	Introduction to Economics of Natural Resources	3	AREC or ECON 202	S
AREC 341	Environmental Economics	3	AREC 202 or ECON 202	F
AREC 375	Agricultural Law	3	Junior standing or above	F
AREC 442	Water Resource Economics	3	AREC 342; ECON 306, may be taken concurrently	S
<b>Atmospheric Science</b>				
ATS 350/351	Introduction to Weather and Climate/Lab	2/1	NONE	F
ATS 440	Sea Level Rise and a Sustainable Future	3	NONE	S
<b>Botany and Zoology</b>				
BZ 440/441	Plant Physiology/Lab	5	BZ 120 or LIFE 103	S
BZ 450	Plant Ecology	4	LIFE 103 or BZ 120	S
BZ 471/472	Stream Biology and Ecology/Lab	4	LIFE 320 or LAND 220 or LIFE 220	F (odd years)
<b>Chemistry</b>				
CHEM 334	Quantitative Analysis Laboratory	1	CHEM 114, CHEM 335 (may be taken concurrently) CHEM 113 with minimum grade of C, CHEM 334 (may be taken	F, S
CHEM 335	Introduction to Analytical Chemistry	3	concurrently)	F, S
CHEM 338	Environmental Chemistry	3	CHEM 107 or CHEM 113 or CHEM 120 or CHEM 231; CHEM 245 or CHEM 341 or CHEM 345	S
<b>Civil Engineering</b>				
CIVE 322	Basic Hydrology	3	CIVE 203 or STAT 301 or STAT 315; CIVE 300 or CBE 331 or WR 416 CIVE 300 or LIFE 320; BZ 110 and BZ 111 or BZ 120 or LIFE 102 or	F, S
CIVE 330	Ecological Engineering	3	SOCR 240; CHEM 113	S
CIVE 413	River Mechanics	3	CIVE 300 or WR 416	F
CIVE 423	Groundwater Engineering	3	CIVE 300 or CBE 331 or WR 416	S
CIVE 440	Nonpoint Source Pollution	3	CIVE 300 or CIVE 322 or SOCR 240 or WR 416	F
<b>Computer Science</b>				
CS 345	Machine Learning Foundations and Practice	3	CS 22; CS 150B or 152 or 165 or DSCI 235; MATH 155 or 160; STAT 301 or 307 or 315	F, S

**Data Science**

DSCI 320	Optimization Methods in Data Science	3	CS 163 or 164 or 165 or 220 or DSCI 235; MATH 255 or 256 or 261; DSCI or MATH 369	F
DSCI 335	Inferential Reasoning in Data Analysis	3	AUCC Advanced Writing; STAT 301 or 315	S
DSCI 336	Data Graphics and Visualization	1	STAT 341	S
DSCI 445	Statistical Machine Learning	3	DSCI or MATH 369; STAT 341	F

**Economics**

ECON 335	Introduction to Econometrics	3	ECON 204; STAT 201 or 204 or 301 or 307 or 311 or 315; MATH 141 or 155 or 160	F, S
ECON 340	Introduction to Economics of Natural Resources	3	AREC or ECON 202	S

**Ecosystem Science and Sustainability**

ESS 311	Ecosystem Ecology	3	PH 121 or 141; LIFE 320	F
ESS 312	Sustainability Science	3	LIFE 320	S
ESS 353	Global Change Impacts, Adaptation, Mitigation	3	LAND 220 or LIFE 220 or LIFE 320	S
ESS 365	Global Climate Justice	3	NONE	F
ESS 400	Global Perspectives on Sustainability	3	ESS 311	S
ESS 474	Limnology	3	LAND 220 or LIFE 220 or LIFE 320	F (even years)
ESS 523A	Environmental Data Science Applications: Introduction	5	STAT 158 or 301	F
ESS 523C	Environmental Data Science Apps: Water Resources	2	ESS 523A	S

**Environmental & Radiological Health Science**

ERHS 320	Environmental Health - Water Quality	3	MIP 300, may be taken concurrently	F
ERHS 448	Environmental Contaminants	3	CHEM 241 or CHEM 245 or CHEM 341 or CHEM 345	F

**Fish, Wildlife, and Conservation Biology**

FW 300	Biology and Diversity of Fishes	2	BZ 111 or LIFE 103	S
FW 301	Ichthyology Lab	1	FW 300, may be taken concurrently	S

**Forest and Rangeland Stewardship**

F 311	Forest Ecology	3	LIFE 320 or LAND 220 or LIFE 220 or F 209	F, S
F 324	Fire Effects and Adaptations	3	LIFE 320 or LAND 220 or LIFE 220 or F 209	S

**Global Environmental Sustainability**

GES 440	Sea Level Rise and a Sustainable Future	3	NONE	S
GES 450	Global Sustainability and Health	3	GES 101	F, S
GES 470	Applications of Environmental Sustainability	3	GES 101	F, S

**Geography**

GR 320	Cultural Geography	3	GR 100	F (odd years)
GR 330	Urban Geography	3	GR 100	F, S, SS
GR 331	Geography of Farming Systems	3	GR 100	S (odd years)

**Geography cont'd.**

GR 323	Remote Sensing and Image Interpretation	3	NONE	F, S
GR 333	Glaciers and Climate Change	3	GR 100 or GR 210 or GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150	F
GR 348	Biogeography	3	3 credits of GR coursework	F, S
GR 410	Climate Change: Science, Policy, and Implications	3	3 credits of GR coursework	S

**Geology**

GEOL 446	Environmental Geology	3	GEOL 110 or GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150; CHEM 111; MATH 155 or 160; PH 121 or PH 141.	S
GEOL 452	Hydrogeology	4	GEOL 110 or GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150 or GR 210; MATH 161 or MATH 255; PH 121 or PH 141.	F
GEOL 454	Geomorphology	4	(GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150 or GR 210) and (STAT 301 or STAT 307 or STAT 315)	S

**Graduate Seminar**

GRAD 592	Water Resources Seminar	1	NONE	F
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**History**

HIST 355	American Environmental History	3	At least 3 credits of HIST 100-499	F, S, SS
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**Natural Resources**

NR 310	Ecosystem Services and Human Well-Being	3	AREC 202 or ECON 202 or ESS 211 or LAND 220/LIFE 220.	F
NR 320	Natural Resources History and Policy	3	NONE	F, S, SS
NR 323	Remote Sensing and Image Interpretation	3	NONE	F, S
NR 330	Human Dimensions of Natural Resources	3	NR 120A or NR 120B	F
NR 375	Environmental and Natural Resources Leadership	1	NONE	S
NR 400	Public Communication in Natural Resources	3	Completion of AUCC 2; Junior standing or above	F, S, SS
NR 422	GIS Applications for Natural Resource Management	4	NR 319	S
NR 425	Natural Resource Policy and Sustainability	3	NR 320	S
NR 450	Geospatial Project Design and Analysis	4	GR 420 or NR 319	F
NR 453	Geospatial Field Methods in Natural Resources	2	NR 319 or GR 420	SS

**Natural Resource Recreation and Tourism**

NRRT 330	Social Aspects of Natural Resource Management	3	NONE	F, S
NRRT 362	Environmental Conflict Management	3	NRRT 262	F

**Rangeland Ecosystem Science**

RS 378	Disturbance Ecology	2	F 209 or LAND/LIFE 220 or LIFE 320	S
RS 432	Rangeland Measurements and Monitoring	2	NR 220 and RS 300, may be taken concurrently; STAT 201 or 301 or 307	F

**Rangeland Ecosystem Science cont'd.**

RS 478	Ecological Restoration	3	(BZ 450 or F 209 or LAND 220 or LIFE 220 or LIFE 320) and SOCR 240	S
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**Sociology**

SOC 322	Environmental Justice	3	SOC 100 OR SOC 105	F, S
SOC 323	Soc. Of Environmental Cooperation & Conflict	3	SOC 100 OR SOC 105	S
SOC 461	Water & Social Justice	3	SOC 100 OR SOC 105	F, S, SS

**Soil and Crop Sciences**

SOCR 370	Climate-Smart Irrigation Principles	2	HORT 100 or SOCR 100 or BZ 120; SOCR 240	S
SOCR 371	Irrigation of Field Crops	1	SOCR 370	F
SOCR 375	Soil Biogeochemistry	3	SOCR 240	S
SOCR 440	Pedology	4	NONE	F
SOCR 442	Fores and Range Soils	3	NONE	S

**Statistics**

STAT 305	Sampling Techniques	3	STAT 301 or 307 or 311 or 315	F
STAT 342	Statistical Data Analysis II	3	STAT 340 or 341	S

**Watershed Science**

WR 406	Seasonal Snow Environments	3	Junior standing or above	S (odd years)
WR 523C	Environmental Data Science Apps: Water Resources	2	ESS 523A	S
WR 575	Snow Hydrology Field Methods	1	NONE	S