

General Curriculum Report # 298

UNIVERSITY OF IDAHO – OFFICE OF THE REGISTRAR
NOVEMBER 15, 2019

TO: MEMBERS OF THE UNIVERSITY OF IDAHO FACULTY

The items listed below, approved by the University Curriculum Committee, will be considered to have the necessary faculty approvals unless a petition requesting further consideration of specific items is signed by five faculty members and submitted to the chair of the Faculty Senate within 14 calendar days after the date of circulation. If no petition is received within 14 days, the entire report will be submitted to the president for approval and transmittal to the regents, if regents' action is required. If a petition is received, the items in the report for which further consideration is requested will be referred to the Faculty Senate and the remainder of the report will move forward. On items referred to it, the council may: (1) affirm the action and report it to a meeting of the university faculty, (2) amend the action and report it to a meeting of the university faculty, or (3) rescind the action. *Note:* If a petition concerns courses or curricula in the College of Letters, Arts and Social Sciences or in the College of Agricultural and Life Sciences, and is signed by five faculty members of the respective college, those items will be returned to the college concerned for further consideration.

All items below are considered effective Summer 2020 unless otherwise noted with the approved item.

COLLEGE OF AGRICULTURAL AND LIFE SCIENCES

DEPARTMENT OF AGRICULTURAL AND EXTENSION EDUCATION

1. Change the following courses:

AGED 350 Leadership Event Coordination

1-3 credits, max 6

This course introduces students to the planning and implementation of leadership activities for the FFA - Career & Technical Student Organization. Students will use leadership, communications, and teambuilding skills to plan leadership and career development events (CDE/LDE), awards ceremonies, educational workshops, and stakeholder activities as part of the Idaho FFA State Leadership Conference (travel required). Students will collaborate with stakeholder groups including the Idaho FFA Association, Idaho FFA Alumni, Idaho FFA Foundation, Idaho Agriculture Teachers Association (IATA), and the Idaho Division of Career and Technical Education.

AGED 359 Developing 4-H Youth Programs

2-3 credits

~~Planning, development, and leadership principles of 4-H/youth program; role of 4-H/youth educator and volunteer leader. Web-based course.~~ [This course provides participants with an overview of the planning, development, and leadership principles of a 4-H/Youth Development program, the role of the 4-H/Youth Development Extension Education, Program Coordinator, and volunteer leader.](#)

AGED 461 Student Teaching Portfolio

2-3 credits

Summary of the 15-week practicum experience; a notebook portfolio to include unit lesson plans, daily teaching plans, video example of teaching, report of early field experience, daily journal, summary of 10 positive and 10 challenging teaching experiences, supervisory assessments of teaching by cooperating instructor and university supervisor, and cooperating teacher's final evaluation. (Spring only)

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DEPARTMENT OF ANIMAL AND VETERINARY SCIENCE

1. Add the following courses:

AVS 301 Undergraduate Research in Animal Science

1-3 credits, max 6

Undergraduate research related to animal and veterinary science. Graded P/F.

AVS 550 Critical Evaluation of Scientific Research

2 credits

Students will learn how to critically evaluate scientific literature, develop an understanding of current molecular biology, biotechnology, genomics and/or genetics techniques and strategies employed in the fields of biology and animal science, and develop scientific writing skills. Graded P/F.

DEPARTMENT OF ENTOMOLOGY, PLANT PATHOLOGY AND NEMATODOLOGY

1. Make the following changes to the **B.S.Ag.L.S. in Entomology**:

Entomology (B.S.Ag.L.S.)

Required course work includes the university requirements (see regulation J-3) and:

Agricultural and Life Sciences Core		33-34 <u>13</u>
Entomology Courses		
BIOL 114	Organisms and Environments	4
<u>BIOL 115</u>	<u>Cells and the Evolution of Life</u>	<u>3</u>
<u>BIOL 115L</u>	<u>Cells and the Evolution of Life Laboratory</u>	<u>1</u>
BIOL 312	Molecular and Cellular Biology	3
BIOL 313	Molecular and Cellular Laboratory	1
<u>CHEM 111</u>	<u>General Chemistry I</u>	<u>3</u>
<u>CHEM 111L</u>	<u>General Chemistry I Laboratory</u>	<u>1</u>
CHEM 112	General Chemistry II	3
CHEM 112L	General Chemistry II Laboratory	2
<u>COMM 101</u>	<u>Fundamentals of Public Speaking</u>	<u>2</u>
ENT 322	General and Applied Entomology	4
<u>ENT 400</u>	<u>Seminar</u>	<u>1</u>
ENT 438	Pesticides in the Environment	3

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ENT 440	Insect Identification	4
ENT 441	Insect Ecology	3
PLSC 102	The Science of Plants in Agriculture	3
PLSC 207	Introduction to Biotechnology	3
PLSC 400	Seminar	1
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
STAT 251	Statistical Methods	3
Select one of the following:		4
BIOL 213	Principles of Biological Structure and Function	
PLSC 205	General Botany	
Select one of the following:		3
CHEM 275	Carbon Compounds	
CHEM 277	Organic Chemistry I	
Select one of the following:		3
ENGL 207	Persuasive Writing	
ENGL 313	Business Writing	
ENGL 316	Environmental Writing	
ENGL 317	Technical Writing	
ENGL 318	Science Writing	
Select one of the following:		3-4
MATH 143	College Algebra	
MATH 160	Survey of Calculus	
MATH 170	Calculus I	
Select one of the following:		3
PLP 415	Plant Pathology	
SOIL 425	Microbial Ecology	
Select one of the following:		4
PHYS 100	Fundamentals of Physics	
& PHYS 100L	Fundamentals of Physics Lab	
PHYS 111	General Physics I	
& PHYS 111L	General Physics I Lab	
Select 3 credits of Biotechnology electives		3
Select 5 credits of Entomology electives		5
Select 6 9 credits of Life Science electives		6 9
Select 4 credits of Mathematics electives		4

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~~Select 4 credits of Physics electives~~

4

Select one of the following:

3-5

~~BIOL 154 Introductory Microbiology
& BIOL 155 and Introductory Microbiology Laboratory~~
[EPPN 154](#) [Microbiology and the World Around Us](#)
[& EPPN 155](#) [Microbiology and the World Around Us: Laboratory](#)

BIOL 250 General Microbiology
& BIOL 255 and General Microbiology Lab

BIOL 300 Survey of Biochemistry

[or](#) BIOL 380 Biochemistry I

CHEM 253 Quantitative Analysis
& CHEM 254 & Quantitative Analysis: Lab

Select one of the following:

3-4

BIOL 310 Genetics

[&](#) BIOL 315 Genetics Lab

GENE 314 General Genetics

Total Hours

~~109-113~~ [111-115](#)

Courses to total 128 credits for this degree

DEPARTMENT OF FAMILY AND CONSUMER SCIENCES

1. Add the following course:

FCS 370 Meal Management

3 credits

Principles of meal management for individual and family meals including menu planning, purchasing, preparation, and service. Includes cultural, social, economic, and environmental aspects of food selection and menu planning and the role of food in promotion of a healthy lifestyle. Hybrid course integrating web-based modules and face-to-face class sessions.

Prereq: FCS 275

2. Change the following courses:

FCS 224 Apparel Construction and Assembly Processes

3 credits

~~Design conception, fabric characteristics, garment construction and assembly, principles of fitting, quality control for the apparel industry. Two 3-hour studios a week and assigned work. Students~~

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~~must complete this course with a grade of 'C' or higher as a prerequisite to future Clothing, Textiles and Design courses. (Spring only)~~ [The course explores intermediate-level garment construction techniques and the relationship between design concepts, fabric characteristics, and fit. Students will complete individual projects in a variety of fabric types and assembly techniques within an apparel industry context. Two 3-hour studios per week, an expected 6-9 hours of outside studio time, and assigned work. Students must complete this course with a grade of 'C' or higher as a prerequisite to future Apparel, Textiles and Design courses.](#)

Prereq: ~~Apparel, Textiles, and Design major; or~~ [FCS 124 or Instructor](#) Permission

FCS 270 Scientific Principles of Food Preparation

3 credits

Exploration of the scientific principles, [basic concepts](#), and techniques of food preparation; [food safety principles; sensory evaluation of food.](#) ; ~~applied sensory evaluation of food. (Fall only)~~

Prereq: ~~Major in the Department of Family and Consumer Sciences or Permission.~~

FCS 275 Experimental Foods

2 credits

Exploration of food preparation and application of underlying scientific principles through laboratory experiments. [Applied sensory evaluation of food products; recipe modification and testing for special dietary considerations.](#) Two 2-hour lab sessions per week. ~~(Spring only) On-line modules focus on food safety, menu planning, food cost control, and cultural and religious influences on food choices. Hybrid course with one 3-hr lab and one web module a week. (Spring only)~~

Prereq: ~~FCS 270 and a major in the Department of Family and Consumer Sciences; or Permission.~~

FCS ~~384~~ [482](#) Quantity Food Production and Equipment

3 credits

Principles and practices of food production in large volume; foodservice systems [and management](#); use and selection of institutional foodservice equipment. Three hours of lecture per week. (Fall only)

Prereq: ~~FCS 275 or Permission.~~ [FCS 370 and FCS 375](#)

FCS ~~385~~ [483](#) Quantity Food Production and Equipment Lab

2 credits

Quantity food production lab and supervised practice experience including equipment training, recipe development and testing, theme meal production, and foodservice facility rotations. (Fall only)

Prereq: ~~FCS 270 and FCS 275~~ [FCS 370 and 375](#)

Coreq: FCS ~~384~~ [482](#)

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DEPARTMENT OF FOOD SCIENCE

1. Change the following courses:

FS 113 Introduction to Vines and Wines

3 credits

The importance of viticulture (grape growing) ~~including world wine regions~~ and enology (winemaking); [wine quality](#). Cooperative: open to WSU degree-seeking students.

FS 301 Food Mycology

3 credits

Survey of the fungi important in food production, storage, and spoilage. [Includes two hours of lecture and three hours of lab per week](#). Cooperative: open to WSU degree-seeking students.

Coreq or Prereq: BIOL 250 or BIOL 255

DEPARTMENT OF PLANT SCIENCES

1. Make the following changes to the **B.S.Pl.Sc. in Biotechnology and Plant Genomics**:

Biotechnology and Plant Genomics (B.S.Pl.Sc.)

Required course work includes the university requirements (see regulation J-3) and:

AGED 406	Exploring International Agriculture	3
or POLS 441	Genes and Justice: Comparative Biotechnology Policy Formation	
or AGED 407	Global Agricultural & Life Sciences Systems	
BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
ENGL 313	Business Writing	3
or ENGL 317	Technical Writing	
PLSC 102	The Science of Plants in Agriculture	3
PLSC 400	Seminar	1
SOIL 205	The Soil Ecosystem	3
Select one of the following:		4-5
EPPN 154	Microbiology and the World Around Us	
& EPPN 155	Microbiology and the World Around Us: Laboratory	
BIOL 250	General Microbiology	
& BIOL 255	General Microbiology Lab	

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Select one of the following:		4
CHEM 101	Introduction to Chemistry	
& 101L	Introduction to Chemistry Laboratory	
CHEM 111	General Chemistry I	
& 111L	General Chemistry I Laboratory	
Select one of the following:		3-4
MATH 143	College Algebra	
MATH 160	Survey of Calculus	
MATH 170	Calculus I	
Select one of the following:		3
PLSC 398	Internship	
PLSC 402	Undergraduate Research in Plant Science	
PLSC 499	Directed Study	
Biotechnology and Plant Genomics Courses		
BIOL 380	Biochemistry I	4
BIOL 444	Genomics	3
CHEM 112	General Chemistry II	3
CHEM 112L	General Chemistry II Laboratory	2
CHEM 277	Organic Chemistry I	3
CHEM 278	Organic Chemistry I: Lab	1
GENE 314	General Genetics	3
PLSC 207	Introduction to Biotechnology	3
PLP 415	Plant Pathology	3
PLSC 401	Plant Physiology	3
PLSC 433	Plant Tissue Culture Techniques	3
PLSC 440	Advanced Laboratory Techniques	4
PLSC 446	Plant Breeding	3
PLSC 486	Plant Biochemistry	3
PLSC 488	Genetic Engineering	3
STAT 251	Statistical Methods	3
Select 12 credits of Biotechnology and Genomics of Plants electives from the following:		12
BIOL 213	Principles of Biological Structure and Function	
BIOL 382	Biochemistry I Laboratory	
BIOL 482	Protein Structure and Function	
BIOL 485	Prokaryotic Molecular Biology	
BIOL 487	Eukaryotic Molecular Genetics	

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ENT 322	General and Applied Entomology	
PLP 416	Plant Pathology Lab	
PLSC 201	Principles of Horticulture	
PLSC 205	General Botany	
PLSC 338	Weed Control	
PLSC 407	Field Crop Production	
PLSC 410	Invasive Plant Biology	
PLSC 438	Pesticides in the Environment	
PLSC 451	Vegetable Crops	
PLSC 490	Potato Science	
SOIL 206	The Soil Ecosystem Lab	
SOIL 446	Soil Fertility	
Total Hours		90-92

Courses to total 120 credits for this degree

2. Make the following changes to the **B.S.Pl.Sc. in Crop Management**:

Crop Management (B.S.Pl.Sc.)

Required course work includes the university requirements (see regulation J-3) and:

AGED 406	Exploring International Agriculture	<u>3</u>
or AGED 407	Global Agricultural & Life Sciences Systems	
or POLS 441	Genes and Justice: Comparative Biotechnology Policy Formation	
PLSC 102	The Science of Plants in Agriculture	3
PLSC 400	Seminar	1
SOIL 205	The Soil Ecosystem	3
Select one of the following:		<u>4</u>
BIOL 115	Cells and the Evolution of Life	
& BIOL 115L	Cells and the Evolution of Life Laboratory	
PLSC 205	General Botany	
Select one of the following:		4-5
BIOL 154	Introductory Microbiology	
& BIOL 155	Introductory Microbiology Laboratory	
BIOL 250	General Microbiology	
& BIOL 255	and General Microbiology Lab	

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[EPPN 154](#) [Microbiology and the World Around Us](#)
& [EPPN 155](#) [Microbiology and the World Around Us: Laboratory](#)

Select one of the following: 4

CHEM 101 Introduction to Chemistry
& 101L Introduction to Chemistry Laboratory

CHEM 111 General Chemistry I
& 111L General Chemistry I Laboratory

Select one of the following: 3

~~ENGL 207~~ ~~Persuasive Writing~~

ENGL 313 Business Writing

~~ENGL 316~~ ~~Environmental Writing~~

ENGL 317 Technical Writing

Select one of the following: 3-4

MATH 143 College Algebra

MATH 160 Survey of Calculus

MATH 170 Calculus I

Select one of the following: 3

PLSC 398 Internship

PLSC 402 Undergraduate Research in Plant Science

PLSC 499 Directed Study

Crop Management Courses

AGEC 278 Farm and Agribusiness Management 4

AGEC 289 Agricultural Markets and Prices 3

ASM 305 GPS and Precision Agriculture 3

ASM 315 Irrigation Systems and Water Management 3

ASM 412 Agricultural Safety and Health 2

PLSC 338 Weed Control 4

PLSC 407 Field Crop Production 3

PLSC 408 Cereal Science 3

PLSC 438 Pesticides in the Environment 3

[PLSC 444](#) [Forage and Grassland Management](#) 3

PLSC 451 Vegetable Crops 3

PLSC 480 Field Trip 1

PLSC 490 Potato Science 3

SOIL 206 The Soil Ecosystem Lab 1

Select ~~15~~ 12 credits of Crop Management electives from the following: 1512

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AGEC 302	Managerial Economics: Consumption & Markets
AGEC 356	Agricultural and Rural Policy
AGEC 447	International Development Economics
ASM 107	Beginning Welding
ASM 112	Introduction to Agricultural Systems Management
ASM 409	Agricultural Tractors, Power Units and Machinery Management
ECON 202	Principles of Microeconomics
GENE 314	General Genetics
PLP 415	Plant Pathology
PLP 416	Plant Pathology Laboratory
PLSC 401	Plant Physiology
PLSC 446	Plant Breeding
SOIL 425	Microbial Ecology
SOIL 446	Soil Fertility
STAT 251	Statistical Methods

Select 6 credits of Professional Support electives from the following:

6

AGEC 411	The World of International Agribusiness
AGEC 419	Development and Analysis of Enterprise Budgets
AVS 109	The Science of Animals that Serve Humanity
CHEM 275	Carbon Compounds
CHEM 276	Carbon Compounds Lab
PLSC 201	Principles of Horticulture
PLSC 205	General Botany
PLSC 207	Introduction to Biotechnology
PLSC 300	Plant Propagation
PLSC 398	Internship
PLSC 410	Invasive Plant Biology
PLSC 433	Plant Tissue Culture Techniques
PLSC 440	Advanced Laboratory Techniques
PLSC 488	Genetic Engineering
STAT 251	Statistical Methods
STAT 431	Statistical Analysis

Total Hours

88-90

Courses to total 120 credits for this degree

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3. Make the following changes to the **B.S.Pl.Sc. in Crop Science**:

Crop Science (B.S.Pl.Sc.)

Required course work includes the university requirements (see regulation J-3) and:

AGED 406	Exploring International Agriculture	3
or POLS 441 or AGED 407	Genes and Justice: Comparative Biotechnology Policy Formation Global Agricultural & Life Sciences Systems	
BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
PLSC 102	The Science of Plants in Agriculture	3
PLSC 400	Seminar	1
SOIL 205	The Soil Ecosystem	3
Select one of the following:		4-5
BIOL 154 & BIOL 155	Introductory Microbiology and Introductory Microbiology Laboratory	
BIOL 250 & BIOL 255	General Microbiology General Microbiology Lab	
EPPN 154 EPPN 155	Microbiology and the World Around Us Microbiology and the World Around Us Laboratory	
Select one of the following:		4
CHEM 101 & 101L	Introduction to Chemistry Introduction to Chemistry Laboratory	
CHEM 111 & 111L	General Chemistry I General Chemistry I Laboratory	
Select one of the following:		3
ENGL 207	Persuasive Writing	
ENGL 313	Business Writing	
ENGL 316	Environmental Writing	
ENGL 317	Technical Writing	
Select one of the following:		3-4
MATH 143	College Algebra	
MATH 160	Survey of Calculus	
MATH 170	Calculus I	
Select one of the following:		3
PLSC 398	Internship	

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PLSC 402 Undergraduate Research in Plant Science

PLSC 499 Directed Study

Crop Science Courses

CHEM 275	Carbon Compounds	3
CHEM 276	Carbon Compounds Lab	1
ENT 322	General and Applied Entomology	4
GENE 314	General Genetics	3
PLSC 207	Introduction to Biotechnology	3
PLSC 338	Weed Control	4
PLSC 401	Plant Physiology	3
PLSC 407	Field Crop Production	3
PLP 415	Plant Pathology	3
PLP 416	Plant Pathology Laboratory	1
PLSC 438	Pesticides in the Environment	3
PLSC 446	Plant Breeding	3
PLSC 480	Field Trip	1
SOIL 206	The Soil Ecosystem Lab	1
SOIL 446	Soil Fertility	1-3
STAT 251	Statistical Methods	3

Select 12 credits of Crop Science electives from the following: 12

PLSC 201	Principles of Horticulture
PLSC 205	General Botany
PLSC 300	Plant Propagation
PLSC 398	Internship
PLSC 408	Cereal Science
PLSC 410	Invasive Plant Biology
PLSC 433	Plant Tissue Culture Techniques
PLSC 440	Advanced Laboratory Techniques
PLSC 444	Forage and Grassland Management
PLSC 451	Vegetable Crops
PLSC 488	Genetic Engineering
PLSC 490	Potato Science

Select 6 credits of Professional Support electives from the following: 6

AGEC 278	Farm and Agribusiness Management
AGEC 289	Agricultural Markets and Prices
AGEC 302	Managerial Economics: Consumption & Markets

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AGEC 356	Agricultural and Rural Policy
AGEC 447	International Development Economics
ASM 107	Beginning Welding
ASM 305	GPS and Precision Agriculture
ASM 315	Irrigation Systems and Water Management
ASM 412	Agricultural Safety and Health
STAT 431	Statistical Analysis

Total Hours

~~88-92~~ 89-93

Courses to total 120 credits for this degree

4. Make the following changes to the **B.S.Pl.Sc. in Horticulture and Urban Agriculture**:

Horticulture and Urban Agriculture (B.S.Pl.Sc.)

Required course work includes the university requirements (see regulation J-3) and:

AGED 406	Exploring International Agriculture	3
or POLS 441	Genes and Justice: Comparative Biotechnology Policy Formation	
or AGED 407	Global Agricultural & Life Sciences Systems	
BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
PLSC 102	The Science of Plants in Agriculture	3
PLSC 400	Seminar	1
SOIL 205	The Soil Ecosystem	3
Select one of the following:		4-5
BIOL 154	Introductory Microbiology	
& BIOL 155	Introductory Microbiology Laboratory	
BIOL 250	General Microbiology	
& BIOL 255	General Microbiology Lab	
EPPN 154	Microbiology and the World Around Us	
& EPPN 155	Microbiology and the World Around Us: Laboratory	
Select one of the following:		4
CHEM 101	Introduction to Chemistry	
& 101L	Introduction to Chemistry Laboratory	
CHEM 111	General Chemistry I	
& 111L	General Chemistry I Laboratory	

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Select one of the following:		3
ENGL 207	Persuasive Writing	
ENGL 313	Business Writing	
ENGL 316	Environmental Writing	
ENGL 317	Technical Writing	
Select one of the following:		3-4
MATH 143	College Algebra	
MATH 160	Survey of Calculus	
MATH 170	Calculus I	
Select one of the following:		3
PLSC 398	Internship	
PLSC 402	Undergraduate Research in Plant Science	
PLSC 499	Directed Study	
Horticulture and Urban Agriculture Courses		
CHEM 275	Carbon Compounds	3
CHEM 276	Carbon Compounds Lab	1
ENT 322	General and Applied Entomology	4
PLP 415	Plant Pathology	3
PLSC 201	Principles of Horticulture	3
PLSC 300	Plant Propagation	3
PLSC 401	Plant Physiology	3
PLSC 438	Pesticides in the Environment	3
SOIL 206	The Soil Ecosystem Lab	1
Select 12 credits of Horticulture electives from the following:		12
LARC 288	Plant Materials & Design 1	
PLSC 340	Nursery Management	
PLSC 341	Nursery Management Laboratory	
PLSC 433	Plant Tissue Culture Techniques	
PLSC 451	Vegetable Crops	
PLSC 464	Landscape Maintenance	
PLSC 480	Field Trip	
PLSC 490	Potato Science	
SOIL 417	Market Garden Practicum	
Select 15 credits of Professional Support electives from the following:		15
GENE 314	General Genetics	
PLP 416	Plant Pathology Lab	

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PLSC 205	General Botany	
PLSC 207	Introduction to Biotechnology	
PLSC 338	Weed Control	
PLSC 407	Field Crop Production	
PLSC 410	Invasive Plant Biology	
PLSC 446	Plant Breeding	
PLSC 488	Genetic Engineering	
SOIL 446	Soil Fertility	
STAT 251	Statistical Methods	
Total Hours		82-84

Courses to total 120 credits for this degree

DEPARTMENT OF SOIL AND WATER SYSTEMS

1. Add the following courses:

SOIL 444 Water Quality in the Pacific Northwest

3 credits

Joint-listed with SOIL 544, Cross-listed with ENVS 444

Qualitative aspects of water are covered in this class. Major topics are qualitative aspects of (1): surface water, (2) groundwater, (3) drinking water, (4) water in the oceans, and (5) the human waste stream. Concepts presented are relevant to world-wide water quality issues and concepts; however, an emphasis is placed on issues within the four Pacific Northwest states (ID, AK, OR, WA).

SOIL 448 Drinking Water and Human Health

3 credits

Joint-listed with SOIL 548, Cross-listed with ENVS 448

Understand the characterization, testing, and treatment of chemical, microbial, and hazardous compounds and their impact on human health. Be familiar with drinking water standards, regulatory aspects, and protection of municipal, community, and private well systems. (Spring)

SOIL 544 Water Quality in the Pacific Northwest

3 credits

Joint-listed with SOIL 444, Cross-listed with ENVS 544

Qualitative aspects of water are covered in this class. Major topics are qualitative aspects of (1): surface water, (2) groundwater, (3) drinking water, (4) water in the oceans, and (5) the human waste stream. Concepts presented are relevant to world-wide water quality issues and concepts; however, an emphasis is placed on issues within the four Pacific Northwest states (ID, AK, OR, WA).

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SOIL 548 Drinking Water and Human Health

3 credits

Joint-listed with SOIL 448, Cross-listed with ENVS 548

Understand the characterization, testing, and treatment of chemical, microbial, and hazardous compounds and their impact on human health. Be familiar with drinking water standards, regulatory aspects, and protection of municipal, community, and private well systems. (Spring)

SOIL 556 North Idaho Field Trip

1 credit

Joint-listed with SOIL 456.

Soils and land use in northern Idaho ecosystems; emphasis on soil parent materials, soil formation and morphology, and soil-plant community relationships. Graded P/F. One 3-day field trip; additional class meetings and assignments before and after field trip. Cooperative: open to WSU degree-seeking students.

Prereq: SOIL 205 or Permission

2. Drop the following course:

ASM 105 Survey of Agricultural Mechanics

1-3 credits, max 3

This course is designed to introduce the student to the principles of technology in agriculture. It includes the development of knowledge and skills pertaining to agricultural mechanics, welding, power technology, electricity, and structures. It will provide introductory learning experiences for students in the areas of agricultural systems management.

3. Reactivate and change the following courses:

ASM 240 Computer Applications in ~~Biological~~ Biophysical Systems

3 credits

~~Application of computers in production agriculture; microcomputer principles and operation, disk operating systems; word processing; spreadsheets, database management and other application programs; introduction to one program language.~~ This course is designed as an introductory course to computer applications with specific emphasis on applications used in agriculture and life sciences. Content includes spreadsheet management, database management, data analysis, data visualization and presentation applications. Two lec and one 2-hr lab a wk. Recommended Preparation: three credits of college math. Two lectures and one 2-hour lab per week.

SOIL 458 Soil and Site Evaluation

~~1-2 credits, max 8~~ 2 credits

Description and evaluation of soils; emphasis on morphological features and properties that influence land use. Graded P/F. Two to -four hours of lab per week (may include local field trips);

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one 3-day or one 6-day field trip. Recommended Preparation: SOIL 205. [Cooperative: open to WSU degree-seeking students.](#)

4. Change the following courses:

ASM 202 Agricultural Shop Practices

~~2~~ **3** credits

Primarily for agricultural ~~mechanization~~ [systems management](#) and agricultural education students. Operation, use, and care of shop tools and equipment. One lecture, ~~and~~ one 3-hour lab, [and two hours of individual practice](#) per week.

SOIL 417 Market Garden Practicum

1-6 credits

Experiential learning-based course that covers all aspects of running a small acreage vegetable farm. Topics include farm planning, crop rotation, soil fertility and testing, weed management and food systems. Students satisfy credit hours through participation in lecture/discussion, field work and field trips. Recommended preparation: SOIL 205. ~~(Summer-only)~~

SOIL 456 North Idaho Field Trip

1 credit

[Joint-listed with SOIL 556](#)

Soils and land use in northern Idaho ecosystems; emphasis on soil parent materials, soil formation and morphology, and soil-plant community relationships. Graded P/F. One 3-day field trip; additional class meetings and assignments before and after field trip. Cooperative: open to WSU degree-seeking students.

Prereq: SOIL 205 or Permission

5. Make the following changes to the **B.S.Ag.L.S. in Sustainable Food Systems**:

Sustainable Food Systems (B.S.Ag.L.S.)

Required course work includes the university requirements (see regulation J-3) and:

Agricultural and Life Sciences Core		33-34 13
Sustainable Food Systems Courses		
AGED 448	Foundations of Extension Education	2
ASM 315	Irrigation Systems and Water Management	3
AVS 109	The Science of Animals that Serve Humanity	4
BIOL 115	Cells & the Evolution of Life	3

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BIOL 115L	Cells & the Evolution of Life Laboratory	1
CHEM 275	Carbon Compounds	3
or CHEM 277	Organic Chemistry I	
ENT 322	General and Applied Entomology	4
FCS 205	Concepts in Human Nutrition	3
FOR 221	Principles of Ecology	3
FS 110	Introduction to Food Science	3
FS 220	Food Safety and Quality	3
FS 436	Principles of Sustainability	3
PLSC 102	The Science of Plants in Agriculture	3
PLSC 338	Weed Control	4
PLSC 451	Vegetable Crops	3
POLS 364	Politics of the Environment	3
SOC 101	Introduction to Sociology	3
SOC 350	Food, Culture, and Society	3
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
SOIL 210	Food Systems and Healthy Lifestyles	3
SOIL 398	Internship	3
SOIL 400	Seminar	1
SOIL 417	Market Garden Practicum ¹	3-6
SOIL 427	Sustainable Food Systems	3
SOIL 446	Soil Fertility ¹	3
Select one of the following:		2-3
COMM 101	Fundamentals of Oral Communication	
COMM 150	Online Oral Communication	
Select one of the following:		3-5
BIOL 154	Introductory Microbiology	
& BIOL 155	Introductory Microbiology Laboratory	
BIOL 250	General Microbiology	
& BIOL 255	General Microbiology Lab	
BIOL 300	Survey of Biochemistry	
Select one of the following:		4
CHEM 101	Introduction to Chemistry	
& CHEM 101L	Introduction to Chemistry Lab	
CHEM 111	General Chemistry I	

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[& CHEM 111L](#) [General Chemistry I Laboratory](#)

Select one of the following:

3-4

[MATH 143](#)

[College Algebra](#)

[MATH 160](#)

[Survey of Calculus](#)

[MATH 170](#)

[Calculus I](#)

Select one of the following:

3

[ENGL 207](#)

[Persuasive Writing](#)

[ENGL 313](#)

[Business Writing](#)

[ENGL 316](#)

[Environmental Writing](#)

[ENGL 317](#)

[Technical Writing](#)

Total Hours

~~102-123~~ 94-101

¹ Students must complete at least 3 credits in both SOIL 417 and SOIL 446.

Courses to total 128 credits for this degree

DEPARTMENT OF WATER RESOURCES

1. Change the following course:

WR 506 Interdisciplinary Methods in Water Resources

~~3~~ **2 credits**

Student and faculty teams from traditionally disparate disciplines address real issues to develop methods for communicating across disciplines and for solving water resources problems. The course takes a problem-oriented approach using case studies. Faculty will lead students through this integrative process with lectures and working sessions. (Fall only)

COLLEGE OF EDUCATION, HEALTH AND HUMAN SCIENCES

DEPARTMENT OF CURRICULUM AND INSTRUCTION

1. Add the following course:

ED 533 College Teaching Apprenticeship

1-6 credits

This class enables graduate students to gain experience in college teaching under the supervision of a faculty member.

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2. Change the following courses:

EDCI 408 Integrated Elementary Methods Practicum I

~~13~~ credits

Implementation of elementary content ~~mathematics/science/social studies~~ methods, research, curricula, and technology in ~~elementary~~ K-8 classrooms with specific focus on culturally responsive management of a classroom and social-emotional learning, including recognition of early warning signs in students. Course will include 30 hours in K-8 classrooms ~~and 15 hours of associated scheduled activities~~.

Prereq: EDCI ~~32002~~ or Permission

Coreq: EDCI 320, EDCI 322, EDCI 325, and DAN 360; OR EDCI 327, EDCI 328, EDCI 329 and EDCI 410; or Permission

EDCI 409 Integrated Elementary Methods Practicum II

1 credit

Implementation of ~~literacy and arts~~ elementary content methods, research, curricula, and technology in ~~elementary~~ K-8 classrooms. Course will include 30 hours in K-8 classrooms and 15 hours of associated scheduled activities.

Prereq: EDCI ~~302-408~~ or Permission

Coreq: EDCI 320, EDCI 322, EDCI 325, and DAN 360; OR EDCI 327, EDCI 328, EDCI 329, and EDCI 410; or Permission

3. Make the following changes to the **B.S.Ed. in Elementary Education**:

Elementary Education (B.S.Ed.)

Required course work includes the university requirements (see regulation J-3), successful completion of Praxis II test, the Idaho Comprehensive Literacy Assessment parts 1 and 2 prior to the internship, and completion of requirements for a subject area endorsement as outlined by the Idaho State Board of Education requirements for a Standard Secondary Certificate. Students must maintain minimum 2.75 GPAs and earn grades of C or above in the following courses:

COMM 101	Fundamentals of Oral Communication	2
EDCI 201	Contexts of Education	3
EDCI 301	Lrng, Dvlpmnt, & Assessment	3
EDCI 302	Teaching Culturally Diverse Learners	3
EDCI 321	Literature for Children	3
EDSP 300	Educating for Exceptionalities	3
EDCI 466	Literacy Assessment and Intervention	3
HIST 101	World History I	3

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or HIST 102	World History II	
HIST 111	United States History I	3
or HIST 112	United States History II	
MATH 143	College Algebra	3
MTHE 235	Mathematics for Elementary Teachers I	3
MTHE 236	Mathematics for Elementary Teachers II	3
PEP 350	Elementary Health and Physical Education	3
PSYC 305	Developmental Psychology	3
Select one Advanced Composition Elective course:		3
ENGL 207	Persuasive Writing	
ENGL 208	Personal & Exploratory Writing	
ENGL 291	Beginning Poetry Writing	
ENGL 292	Beginning Fiction Writing	
ENGL 309	Rhetorical Style	
ENGL 313	Business Writing	
ENGL 317	Technical Writing	
ENGL 401	Writing Workshop for Teachers	
Select one English Elective in Composition or Literature ¹		3
Select one Literature Elective		3
Select 6 credits of Social Science Electives other than Psychology		6
Elementary Education Major Requirements		
EDCI 408	Integrated Elementary Methods Practicum I	<u>3</u>
EDCI 409	Integrated Elementary Methods Practicum II	<u>1</u>
Mathematics/Science/Social Studies/Technology Block		
EDCI 327	Elementary Math Education	3
EDCI 328	Elementary Social Studies Education	3
EDCI 329	Elementary Science Education	3
EDCI 408	Integrated Methods Practicum I	1
EDCI 410	Technology, Teaching and Learning	2
Literacy/Arts Education Block		
DAN 360	Teaching Creative Dance for Children	1
EDCI 320	Teaching Reading and Literacy	3
EDCI 322	Teaching Writing/Language Arts	3
EDCI 325	Elementary Art Education	3
EDCI 409	Integrated Methods Practicum II	1
Internship Semester		

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EDCI 401	Internship Seminar	1
EDCI 483	Elementary Internship I	14
Total Hours		9496

Courses to total 120 credits for this degree

¹ Excluding ENGL 101 Writing and Rhetoric I and ENGL 102 Writing and Rhetoric II.

4. Make the following changes to the **Health Education Teaching Minor**:

Health Education

28-Credit Health Education Teaching Minor

A current advanced first aid and emergency care card is required upon graduation.

FCS 205	Concepts in Human Nutrition	3
H&S 150	Wellness Lifestyles	3
or MVSC 201	Physical Activity, Wellness & Behavior Change for Healthy Active Lifestyles	
H&S 423/523	Health Education Methods	3
H&S 450	Critical Health Issues	3
H&S 451	Psychosocial Determinants of Health	3
H&S 490	Health Promotion	3
MVSC 486	Healthy Active Lifestyle Assessment and Intervention	3
or MVSC 586	Healthy Active Lifestyle Assessment and Intervention	
PSYC 330	Human Sexuality	3
or FCS 240	Intimate Relationships	
Select one of the following sequences:		4
BIOL 102 & 102L	Biology and Society and Biology and Society Lab	
BIOL 115 & 115L	Cells & the Evolution of Life and Cells and the Evolution of Life Laboratory	
BIOL 120	Human Anatomy	
BIOL 154 & BIOL 155	Introductory Microbiology and Introductory Microbiology Laboratory	
Total Hours		28

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DEPARTMENT OF LEADERSHIP AND COUNSELING

1. Add the following course:

AOLL 615 Research Apprenticeship in Adult, Organizational Learning and Leadership
Credit arranged

This course prepares students to be effective knowledge generators and researchers and to eventually take a place in a research-intensive job position. This position could be in a university or an R&D division of a corporation, non-profit, non-governmental organization, or K-12 setting. The purpose is to prepare students for education, organization, and social research activities in their futures. The course focus is on our collegial research projects and processes and not on traditional content sharing. While there is some content that will be shared such as CITI Training, IRB information, experiences of the instructor(s) in publishing, collaborating, grant writing, conferences, and most importantly the processes of collaborative research (including coming to the question, framing research, theoretical foundations, literature reviews, methodological decision making, data collection, data analysis, writing up research and similar research tasks), the vast majority of the course is organized in a hands-on fashion in which students engage in research alongside faculty and not just read about it, think about it, or study it.

DEPARTMENT OF MOVEMENT SCIENCES

1. Create the following prefix to replace the current **PEB** prefix:

IFIT (Idaho Fitness)

2. Add the following courses:

PEP 430 Activity and Health in Movement and Leisure Sciences

3 credits

Joint-listed with PEP 530, cross-listed with RSTM 430

This course familiarizes students with contemporary research and professional applications of activity in relation to health and wellness using a variety of perspectives in movement and leisure sciences and related disciplines. (Fall only)

RSTM 425 Programming and Marketing in Movement and Leisure Sciences

3 credits

Joint-listed with RSTM 525.

In this course, students will learn the science and art of programming and marketing with a focus on their applications in the design, implementation, and evaluation of movement and leisure programs. By the end of the course, each student will have the requisite skills to implement a program of their own design. (Fall only)

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RSTM 430 Activity and Health in Movement and Leisure Sciences

3 credits

Joint-listed with RSTM 530, cross-listed with PEP 430

This course familiarizes students with contemporary research and professional applications of activity in relation to health and wellness using a variety of perspectives in movement and leisure sciences and related disciplines. (Fall only)

RSTM 525 Programming and Marketing in Movement and Leisure Sciences

3 credits

Joint-listed with RSTM 425.

In this course, students will learn the science and art of programming and marketing with a focus on their applications in the design, implementation, and evaluation of movement and leisure programs. By the end of the course, each student will have the requisite skills to implement a program of their own design. (Fall only)

RSTM 530 Activity and Health in Movement and Leisure Sciences

3 credits

Joint-listed with RSTM 430, cross-listed with PEP 530

This course familiarizes students with contemporary research and professional applications of activity in relation to health and wellness using a variety of perspectives in movement and leisure sciences and related disciplines. (Fall only)

RSTM 590 Experience and Event Management

3 credits

Joint-listed with RSTM 490.

This class focuses on the development and management of special events and experiences in recreation, sport, and tourism. (Spring only)

3. Drop the following courses:

RSTM 240 Recreation and Sport Activities, Programming, and Marketing

3 credits

Introduction to recreation activities with applications to programming and marketing in leisure settings. Programming field experience required.

RSTM 260 Foundations of Recreation

3 credits

History of and expanding role of leisure in modern U.S. life; emphasis on factors influencing leisure; analysis of leisure values as related to the individual and society. (Fall only)

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RSTM 370 Health and Human Development in Recreation, Sport, and Tourism

3 credits

Recreation, sport, and tourism across the lifespan (early childhood to late life). Health and human development concepts and theories. (Spring, Alt/years even)

RSTM 395 Diversity in Recreation, Sport and Tourism

3 credits

Delivery of recreation, sport, and tourism services to diverse populations. Analysis of diversity issues in a wide array of leisure settings.

RSTM 575 (s) Leadership, Programming and Marketing

3 credits

Studies of theories, methods, and styles of effective leadership. Includes group dynamics, motivation, team building and leadership skills. Planning and development of activity programs and implementation of marketing techniques. (Fall only)

RSTM 596 Recreation and Sport Management Behavior

3 credits

Management behavior and strategies related to recreation and sport agencies, including leadership, supervision, and a variety of administrative issues. (Spring only)

4. Change the following courses:

AT 507 Emergency Management and Care ~~and Prevention~~ of Injuries and Illnesses

3 credits

Theory and practice of recognition, treatment, and prevention of emergent and/or acute injuries and illnesses.

AT 533 ~~Applied~~ Integrated Rehabilitation Techniques

3 credits

Theory and practice of rehabilitation techniques as applied to individual physical pathologies.

~~PEB-IFIT 106 (s) Individual & Dual Sports~~ Fitness and Wellness

1 credit, max arranged

~~Bowling, racket sports, fencing, golf, gymnastics, conditioning, backpacking, cycling, cross-country skiing, etc. Two days of field trips may be a part of the course requirements for such activities as backpacking, cycling, etc. Two hours per week. Graded P/F.~~ Movement, physical activity, exercise and wellness courses emphasizing the holistic well-being/fitness of participants (e.g., Yoga, Pilates, Personal Fitness, Resistance Training, Tai Chi, Mindfulness, etc.). Field trips may be a part of the course requirements. Two to three hours per week. Graded P/F.

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~~PEB-IFIT 107 (s) Individual and Team Sports~~

1 credit, max arranged

~~Field sports, volleyball, basketball, and softball. Two hours per week. Graded P/F. Target, invasion, field, net wall, and outdoor pursuit sport courses (e.g., golf, disc golf, basketball, soccer, softball, volleyball, table tennis, climbing, fly fishing, sports conditioning, etc.). Field trips may be a part of the course requirements. Two to three hours per week. Graded P/F.~~

~~PEB-IFIT 108 (s) Water-Based Fitness and Sports & Fit Act~~

1 credit, max arranged

~~All forms of physical activity performed in the water, including all levels of proficiency in swimming (beginning, intermediate, and advanced), diving, water fitness activities, and scuba. Two hours per week. Graded P/F. Movement, physical activity and exercise performed in the water (e.g., all levels of proficiency in swimming, water fitness, scuba, etc.). Field trips may be a part of the course requirements. Two to three hours per week. Graded P/F.~~

PEP 107 Movement Fundamentals

1 credit

Skill development and teaching knowledge of the fundamentals and concepts of movement. Two lecture-labs per week.

[Prereq: ESHS, Dance or Recreation major, or permission](#)

PEP 132 Skill and Analysis of Striking and Net/Wall Activities

1 credit

This course is designed to develop proficiency in basic skills, strategies, tactics, error detection and correction, rules, teaching skills and curricular models for striking and net/wall activities (e.g. tennis, badminton, pickleball, volleyball, softball, cricket, etc.). Lecture-lab.

[Prereq: ESHS, Dance or Recreation major, or permission](#)

PEP 133 Skill and Analysis of Target and Invasion Activities

1 credit

This course is designed to develop proficiency in basic skills, strategies, tactics, error detection and correction, rules, teaching skills and curricular models for target and invasion activities (e.g. golf, bowling, basketball, soccer, team handball, hockey, football, ultimate Frisbee, etc.). Lecture-lab.

[Prereq: ESHS, Dance or Recreation major, or permission](#)

PEP 134 Skill and Analysis of Recreation and Outdoor Activities

1 credit

This course is designed to develop proficiency in basic skills, strategies, rules, ethics, teaching skills and designing teaching progressions and curricular models for recreation and outdoor activities (e.g. snow shoeing, wall climbing, orienteering, geocaching, skating, bicycling, hiking/walking, jogging, camping). Field trips required.

[Prereq: ESHS, Dance or Recreation major, or permission](#)

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PEP 350 Elementary Health and Physical Education

3 credits

Specific methods, research, curricula, and ~~media technology~~ in teaching elementary health and physical education for diverse populations. Facilitation of understanding content, curriculum, methods and assessment in an integrated setting. ~~Three lecture/lab hours per week and 15 hours of practicum work in the schools and community.~~

Prereq or Coreq: ~~EDCI 327, EDCI 328, and EDCI 329.~~ EDCI 408 or 409

RSTM 104 ~~Introduction to~~ Recreation, Sport, and Tourism in Healthy Communities ~~Professions~~

3 credits

Introduction to the foundations of recreation, sport and tourism professions, ~~and careers, and~~ related issues, resources, ~~and~~ professional opportunities, and the profession's role in supporting healthy active communities. (Fall only)

RSTM 485 Trends and Policies in Recreation, Sport and Tourism

3 credits

Joint-listed with RSTM 585

~~Current trends and issues in the recreation, sport, and tourism field; analysis of selected topics of current relevance. (Alt/years)~~ Current trends and policy issues in the recreation, sport and tourism field; analysis of selected topics of current relevance. (Spring only)

RSTM 490 Experience and Event Management ~~and Entrepreneurship in Recreation, Sport, and Tourism~~

3 credits

Joint-listed with RSTM 590

~~Models of entrepreneurship and components of successful management in recreation, sport, park, and tourism settings such as business planning, human resources, operations and risk management. (Alt/years)~~ This class focuses on the development and management of special events and experiences in recreation, sport, and tourism. (Spring only)

RSTM 585 ~~Policy Analysis and Historical Perspectives of Leisure~~ Trends and Policies in Recreation, Sport and Tourism

3 credits

Joint-listed with RSTM 485

~~Examination of the policy issues that affect the physical education and recreation fields; study of the historical significance of key events and individual contributions from cultural, social and economic points of view. (Fall or Summer only)~~ Current trends and policy issues in the recreation, sport and tourism field; analysis of selected topics of current relevance. (Spring only)

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5. Make the following changes to the **B.S.Rec. in Recreation, Sport, and Tourism Management**:

Recreation, Sport, and Tourism Management (B.S.Rec.)

A minimum cumulative university GPA of 2.25 is required of all recreation majors who seek to take upper-division courses. Recreation, [Sport, and Tourism](#) majors must also achieve a minimum cumulative university GPA of 2.25 to graduate with a B.S.Rec. degree.

Required course work includes the university requirements (see regulation J-3), ~~an academic minor or 20 credits in an approved cognate area of study, the Department of Movement Sciences MVSC 201 core course~~ and the following coursework:

Movement Sciences Undergraduate Curricular Requirements	3
Major Requirements	49-66
Total Hours	52-69

~~Major Core Course~~ Requirements

COMM 101	Fundamentals of Oral Communication	2
H&S 288	First Aid: Emergency Response (or Emergency Responder Certification)	2-3
or RSTM 290	Wilderness First Responder	
NRS 310	Social Science Methods	3-4
or RSTM 455	Design & Analysis of Research in Movement Sciences	
RSTM 104	Introduction to Recreation, Sport, and Tourism Professions	3
MVSC 201	Physical Activity, Wellness and Behavior Change for Healthy Active Lifestyles	3
RSTM 107	Outdoor Recreation and Adventure Sports	3
RSTM 240	Recreation and Sport Activities, Programming, and Marketing	3
RSTM 260	Foundations of Recreation	3
RSTM 280	Practicum in Recreation, Sport, and Tourism	1
RSTM 370	Health and Human Development in Recreation, Sport, and Tourism	3
RSTM 395	Diversity in Recreation, Sport and Tourism	3
RSTM 424	Inclusive Physical Education and Recreation	3
RSTM 490	Management and Entrepreneurship in Recreation, Sport, and Tourism	3
RSTM 485	Trends in Recreation, Sport and Tourism	3
RSTM 498	Internship in Recreation, Sport, and Tourism	9
	Select 9 credits from the following:	9

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RSTM 107	Outdoor Recreation and Adventure Sports
RSTM 424	Inclusive Physical Education and Recreation
RSTM 425	Programming and Marketing in Movement and Leisure Sciences
RSTM 430	Activity and Health in Movement and Leisure Sciences
or PEP 430	
RSTM 485	Trends and Policies in Recreation, Sport and Tourism

Select ~~6~~5 credits from the following:

~~6~~5

RSTM 254	Camp Leadership in Recreation and Sport
RSTM 275	Moral Reasoning and Sport
or RSTM 475	
RSTM 310	Outdoor and Adventure Leadership
RSTM 380	Principles of Travel and Tourism
RSTM 408	Experiential Education and Adventure Recreation
RSTM 490	Experience and Event Management in Recreation, Sport and Tourism
RSTM 203	Workshop
RSTM 204	Special Topics
RSTM 299	Directed Study
MVSC 486	Healthy Active Lifestyle Assessment and Intervention

Select one of the following:

3

ENGL 207	Persuasive Writing
ENGL 313	Business Writing
ENGL 317	Technical Writing

Select one of the following:

3

COMM 233	Intrapersonal Communication
COMM 335	Intercultural Communication
COMM 347	Persuasion
COMM 355	Organizational Communication

Select ~~4~~ credits from the following:

~~4~~

DAN 105	Dance
PEB 106	Individual & Dual Sports
PEB 107	Team Sports
PEB 108	Water-Based Sports & Fit Act
PEP 132	Skill and Analysis of Striking and Net/Wall Activities
PEP 133	Skill and Analysis of Target and Invasion Activities
PEP 134	Skill and Analysis of Recreation and Outdoor Activities

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PEP 135	Skill and Analysis of Basketball and Volleyball
PEP 136	Skill and Analysis of Soccer and Speedball
RSTM 108	Orienteering & Navigation
RSTM 222	Cross-Country Skiing
RSTM 224	Whitewater Rafting
RSTM 225	Kayaking
RSTM 227	Mountain Biking

Total Hours

~~49-66~~

36

Courses to total 120 credits for this degree

6. Make the following changes to the **Outdoor Recreation Leadership Minor**:

Outdoor Recreation Leadership Minor

RSTM 107	Outdoor Recreation and Adventure Sports	3
RSTM 108	Orienteering & Navigation	1
RSTM 290	Wilderness First Responder	3
RSTM 310	Outdoor and Adventure Leadership	3
<u>RSTM 411</u>	<u>Expedition Planning and Management</u>	<u>3</u>
Select <u>96</u> credits from the following:		<u>96</u>
RSTM 216	River Recreation and Water Craft Safety	
RSTM 218	Rock Climbing & Mountaineering	
RSTM 228	Avalanche Fundamentals	
RSTM 229	Swiftwater Rescue Training	
RSTM 240	Recreation and Sport Activities, Programming, and Marketing	
RSTM 254	Camp Leadership in Recreation and Sport	
RSTM 280	Practicum in Recreation, Sport, and Tourism	
RSTM 408	Experiential Education and Adventure Recreation	
Select 4 credits from the following:		4
PEB-IFIT 106	Individual & Dual Sports ¹	
PEB-IFIT 108	Water-Based Sports & Fit Act	
<u>RSTM 108</u>	<u>Orienteering and Navigation</u>	
RSTM 204	Special Topics	
<u>or RSTM 404</u>		

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RSTM 222	Cross Country Skiing
RSTM 224	Whitewater Rafting
RSTM 225	Kayaking
RSTM 227	Mountain Biking
RSTM 299	Directed Studies
or RSTM 499	
RSTM 231	Alpine Skiing
An approved technical competency²	

Total Hours

~~23~~**22**

- ¹ Wall Climbing, Advanced Wall Climbing, Fly Tying, Fly Fishing, Intro Archery/Hunting, Archery, ~~Adventure Racing~~, Scuba, Mountain Biking.
- ² ~~Contact the Movement Sciences departments; practical exam administered by REC faculty. (max 4 credits)~~

Courses to total ~~23~~22** credits for this minor**

COLLEGE OF ENGINEERING

DEPARTMENT OF BIOLOGICAL ENGINEERING

1. Add the following course:

BE 511 Energy and Environmental Auditing
3 credits

Joint-listed with BE 411

This course provides an understanding of energy usage, energy management, and impact of industrial processes on environment. The course covers instrumentation for measuring energy and emissions, diagnostics for energy wastage, environmental life cycle analysis, assessment tools, and writing recommendations. The graduate version of the course includes a case study and in-depth analysis of uncommon energy saving recommendations.

Prereq: ENGR 240 and (ENGR 320 or ME 322), or Permission

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2. Drop the following course:

BE 425 Introduction to Biomedical Engineering

3 credits

Principles of biomedical engineering, including biomechanics, biomaterials, nano-osseointegration, tissue engineering, cardiovascular systems and artificial hearts, medical imaging, and a brief survey of biosensors and bio-signaling.

Prereq: Junior or Senior standing in the College of Engineering or the College of Science; or Permission of instructor

3. Change the following course:

BE 411 ~~(s) Industrial Energy Efficiency~~ Energy and Environmental Auditing

~~1 credit, max 6~~ 3 credits

Joint-listed with BE 511

~~This course will provide students an understanding of major industrial energy consuming equipment, diagnostics of energy inefficiencies, and instrumentation for baselining energy efficiency. Students will learn energy auditing and report writing with improvement recommendations including cost analysis. Each semester will cover a specific topic such as "process heating and refrigeration" or "motors and air compressors". As topics change by semester, prerequisites may be only a subset of those listed. Contact instructor for details.~~

This course provides an understanding of energy usage, energy management, and impact of industrial processes on environment. The course covers instrumentation for measuring energy and emissions, diagnostics for energy wastage, environmental life cycle analysis, assessment tools, and writing recommendations. The graduate version of the course includes a case study and in-depth analysis of uncommon energy saving recommendations.

Prereq: ENGR 240 and (ENGR 320 or ME 322), or Permission

DEPARTMENT OF CHEMICAL AND MATERIALS ENGINEERING

1. Add the following courses:

CHE 220 Programming for Chemical Engineers

3 credits

Algorithm development, principles of structured programming techniques, coding of numerical and graphical techniques for solutions of engineering systems.

Prereq: MATH 170, CHEM 111, and CHE 123; or Instructor Permission

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CHE 517 Chemicals and Materials Analysis

3 credits

Theory and experiments in photon/particle interactions, including x-ray diffraction, electron spectroscopy and microscopy techniques for chemical and physical property analyses applied to chemical, materials and nuclear engineering.

Prereq: Graduate Standing or Permission

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

1. Add the following course:

CE 105 Civil Engineering Drafting

3 credits

Freehand and computer aided drawing in pictorial and orthographic projection; section and auxiliary views; descriptive geometry; graphical presentation of data; scales, dimensioning, and measurements. Two lectures and one 2-hour lab per week.

2. Change the following courses:

CE 330 Fundamentals of Environmental Engineering

3 credits

~~Principles of engineered environmental systems, including physical, chemical, and microbiological processes; types and effects of pollutants; regulations; treatment of water, wastewater, sludges, and solid waste; control of air and agricultural pollution. Two lectures and one 3-hour lab a week.~~

This course provides an introduction to environmental engineering. Focus areas include water sources and drinking water treatment, wastewater treatment and water reuse, and solid and hazardous waste management. Quantitative aspects and engineering solutions to environmental problems are emphasized.

Prereq: ENGR 335, CHEM 111, CE 215 and MATH 310. A minimum grade of 'C' or better is required for all pre/corequisites.

CE 342 Theory of Structures

3 credits

Stresses and strains in statically determinate and indeterminate beam, truss, and rigid frame structures; effects of moving loads; matrix displacement method. Two lectures and one ~~3~~²-hour lab per week.

Prereq: ENGR 350, MATH 275, MATH 310, and PHYS 211/PHYS 211L. A minimum grade of 'C' or better is required for all pre/corequisites.

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CE 491 Civil Engineering Professional Seminar

~~1~~ 2 credits

Employment and technical topics; [professional writing](#); [ethics](#); [preparation for Senior Design Project](#). ~~preparation and presentation of professional paper. Course to be taken in last semester before graduation. Graded P/F.~~

Prereq: Senior standing in Civil Engineering

3. Make the following changes to the **B.S.C.E. in Civil Engineering**:

Civil Engineering (B.S.C.E.)

To graduate in this program, a minimum grade of 'C' must be earned in all engineering, mathematics, and science courses used to satisfy the curriculum. [Additionally, to graduate in this program all students are required to take the Fundamentals of Engineering \(F.E.\) exam. Passing the F.E. exam is not required, students must simply show proof that the exam was taken.](#)

Any student majoring in civil engineering may accumulate no more than 14 credits of 'D' or 'F' in mathematics, science, technical elective or engineering courses that are used to satisfy graduation requirements. Included in this number are multiple repeats of a single class or single repeats in multiple classes and courses transferred from other institutions. A warning will be issued in writing to students who have accumulated 7 credits of 'D' or 'F' in mathematics, science, technical elective, or engineering classes used to satisfy curricular requirements.

Required course work includes the university requirements (see regulation J-3) and:

CE 105	Civil Engineering Drafting	<u>3</u>
CE 115	Introduction to Civil Engineering	1
CE 211	Engineering Surveying	3
CE 215	Civil Engineering Analysis and Design	3
CE 322	Hydraulics	4
CE 325	Fundamentals of Hydrologic Engineering	3
CE 330	Fundamentals of Environmental Engineering	3
CE 342	Theory of Structures	3
CE 357	Properties of Construction Materials	4
CE 360	Fundamentals of Geotechnical Engineering	4
CE 372	Fundamentals of Transportation Engineering	3
CE 491	Civil Engineering Professional Seminar	1 <u>2</u>
CE 494	Senior Design Project	3
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1

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ENGL 317	Technical Writing	3
ENGR 105	Engineering Graphics	2
ENGR 210	Engineering Statics	3
ENGR 220	Engineering Dynamics	3
ENGR 335	Engineering Fluid Mechanics	3
ENGR 350	Engineering Mechanics of Materials	3
ENGR 360	Engineering Economy	2
GEOL 111	Physical Geology for Science Majors	3
GEOL 111L	Physical Geology for Science Majors Lab	1
or GEOL 101L	Physical Geology Lab	
MATH 170	Calculus I	4
MATH 175	Calculus II	4
MATH 275	Calculus III	3
MATH 310	Ordinary Differential Equations	3
PHIL 103	Introduction to Ethics	3
or AMST 301	Studies in American Culture	
PHYS 211	Engineering Physics I	3
PHYS 211L	Laboratory Physics I	1
STAT 301	Probability and Statistics	3
Select one of the following:		3-4
ECON 201	Principles of Macroeconomics	
ECON 202	Principles of Microeconomics	
ECON 272	Foundations of Economic Analysis	
Select one of the following:		3-4
BIOL 114	Organisms and Environments	
BIOL 115	Cells & the Evolution of Life	
BIOL/EPPN 154	Introductory Microbiology	
CHEM 112	General Chemistry II	
PHYS 212	Engineering Physics II	
PHYS 213	Engineering Physics III	
MATH 330	Linear Algebra	
STAT 431	Statistical Analysis	
Civil and Environmental Engineering Electives		
A total of 18 credits are required from:		18
CE-prefix 400-level courses ¹		
GEOE-prefix 400-level courses ²		

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Total Hours

~~110-112~~112-114

¹ Except CE 400, CE 403, CE 411, CE 491, CE 494, CE 498, and CE 499.

² Except GEOE 403 and GEOE 499.

Courses to total at least 123 credits for this degree, not counting Math below 170, English below 102, and any classes needed to remove deficiencies.

DEPARTMENT OF COMPUTER SCIENCE

1. Add the following courses:

CS 474 Deep Learning

3 credits

Joint-listed with CS 574

Deep Learning is enabling many rapid technological advances across multiple science disciplines, from automated speech recognition through medical image analysis and to autonomous robots and vehicles. This course will cover Deep Learning topics on gradient decent (GD), cross-validation, regularization, deep feedforward neural networks (NNs), convolutional NNs (CNNs), recurrent NNs (RNNs), deep architectures, transfer learning, and multitask learning. In this course students will learn to: understand and describe concepts and implementations of: deep forward networks, regularization, CNNs, RNNs, and transfer learning; apply CNNs and RNNs for modeling, analyzing, and solving real-world problems; select and apply adequate or best-fit toolboxes to train, tune, and test a deep neural network. Students will also gain an ability to successfully communicate, collaborate, and lead within a project group setting. Additional work required for graduate credit.

Prereq: (CS 121 or MATH 330) and STAT 301

CS 489 Semantic Web and Open Data

3 credits

Joint-listed with CS 589

The Semantic Web extends the core principles of the World Wide Web to make the meaning of data machine-readable. This course covers the technological framework and associated functionalities enabled by the Semantic Web and Linked Open Data that provide a space for large scale data integration, reasoning and analysis. In this course students will learn: an ability to understand and describe the fundamental concepts in Semantic Web, such as ontology, RDF, OWL, logic reasoning, ontology engineering, knowledge graph, Linked Data, SPARQL, Open Data, as well as the inter-relationships among those concepts; an ability to design and implement domain-specific solutions for Big Data problems using concepts such as ontology engineering, data querying, analysis, and transformation, and output generation; an ability to describe and apply ethical concepts such as privacy, intellectual property, and responsibility as they relate to data analysis and the Semantic

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Web. Students will also develop leadership and teamwork abilities through group projects. Additional work required for graduate credit.

Prereq: CS 360 or CS 479 or CS 579

CS 574 Deep Learning

3 credits

Joint-listed with CS 474

Deep Learning is enabling many rapid technological advances across multiple science disciplines, from automated speech recognition through medical image analysis and to autonomous robots and vehicles. This course will cover Deep Learning topics on gradient decent (GD), cross-validation, regularization, deep feedforward neural networks (NNs), convolutional NNs (CNNs), recurrent NNs (RNNs), deep architectures, transfer learning, and multitask learning. In this course students will learn to: understand and describe concepts and implementations of: deep forward networks, regularization, CNNs, RNNs, and transfer learning; apply CNNs and RNNs for modeling, analyzing, and solving real-world problems; select and apply adequate or best-fit toolboxes to train, tune, and test a deep neural network. Students will also gain an ability to successfully communicate, collaborate, and lead within a project group setting. Additional work required for graduate credit.

Prereq: (CS 121 or MATH 330) and STAT 301

CS 589 Semantic Web and Open Data

3 credits

Joint-listed with CS 489

The Semantic Web extends the core principles of the World Wide Web to make the meaning of data machine-readable. This course covers the technological framework and associated functionalities enabled by the Semantic Web and Linked Open Data that provide a space for large scale data integration, reasoning and analysis. In this course students will learn: an ability to understand and describe the fundamental concepts in Semantic Web, such as ontology, RDF, OWL, logic reasoning, ontology engineering, knowledge graph, Linked Data, SPARQL, Open Data, as well as the inter-relationships among those concepts; an ability to design and implement domain-specific solutions for Big Data problems using concepts such as ontology engineering, data querying, analysis, and transformation, and output generation; an ability to describe and apply ethical concepts such as privacy, intellectual property, and responsibility as they relate to data analysis and the Semantic Web. Students will also develop leadership and teamwork abilities through group projects.

Additional work required for graduate credit.

Prereq: CS 360 or CS 479 or CS 579

2. Reactivate the following courses, **both effective Spring 2020:**

CS 441 Advanced Operating Systems

3 credits

Joint-listed with CS 541

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Principles of contemporary operating systems for network and distributed computer systems; sequential processes, scheduling, process synchronization, device management, file systems, memory management, and protection and security. Additional work required for graduate credit.

Prereq: CS 240

CS 541 Advanced Operating Systems

3 credits

Joint-listed with CS 441

Principles of contemporary operating systems for network and distributed computer systems; sequential processes, scheduling, process synchronization, device management, file systems, memory management, and protection and security. Additional work required for graduate credit.

Prereq: CS 240

3. Reactivate and change the following course:

CS 507 ~~Fundamentals of Research~~ Computer Science Research Methods

3 credits

~~Cross-listed with FOR 510~~

~~The research process, the graduate program, and the graduate research project; objectives, techniques, and challenges; science and the scientific method; research literature; ethics; creativity; writing and speaking about research; preparation of a proposal for the graduate research project. Students should be in very early stages of planning their research. [Introduction to Computer Science Research Methods for Graduate Students. Reading and writing research papers, experimental design, statistical analysis, responsible conduct of research, best practices in Computer Science research.](#)~~

~~**Prereq:** Permission~~

4. Change the following course:

CS 383 Software Engineering

~~3~~**4 credits**

Current topics in development of software systems; software life cycle model, requirements definition, requirements analysis, software specification, software architectural design, engineering discipline in software development, software measurement, user interface design, legal and ethical issues in software product development. Projects are developed to demonstrate application of concepts.

Prereq: CS 210, CS 240 and CS 270 or Permission

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DEPARTMENT OF ENGINEERING

1. Add the following courses:

INDT 419 Industrial Sustainability Analysis

3 credits

Cross-listed with TM 419

This course covers two practical topics, which are Sustainability Assessment (Topic 1) and Advanced Manufacturing (Topic 2). Topic 1 establishes the concept of sustainability, and sustainable design and manufacturing. Under this section, we introduce the intersection of sustainability and manufacturing through sustainable development, sustainability principles, and sustainable engineering. Topic 2 provides an overview of what Advanced Manufacturing (AM) is, what approaches are used, what the possible applications are, and what the limitations of the technology are. We focus on AM processes, principles, sustainability performance of AM, and sustainability assessment of AM at the macro- and micro-level. Students will complete one project including techno-economic and socio-environmental studies in the broad area of food-energy-water processes and systems.

TM 419 Industrial Sustainability Analysis

3 credits

Joint-listed with TM 519, Cross-listed with INDT 419

This course covers two practical topics, which are Sustainability Assessment (Topic 1) and Advanced Manufacturing (Topic 2). Topic 1 establishes the concept of sustainability, and sustainable design and manufacturing. Under this section, we introduce the intersection of sustainability and manufacturing through sustainable development, sustainability principles, and sustainable engineering. Topic 2 provides an overview of what Advanced Manufacturing (AM) is, what approaches are used, what the possible applications are, and what the limitations of the technology are. We focus on AM processes, principles, sustainability performance of AM, and sustainability assessment of AM at the macro- and micro-level. Students in the 500-level class will complete two different projects and students in the 400-level class will complete one project. The class projects include techno-economic and socio-environmental studies in the broad area of food-energy-water processes and systems.

TM 519 Industrial Sustainability Analysis

3 credits

Joint-listed with TM 419

This course covers two practical topics, which are Sustainability Assessment (Topic 1) and Advanced Manufacturing (Topic 2). Topic 1 establishes the concept of sustainability, and sustainable design and manufacturing. Under this section, we introduce the intersection of sustainability and manufacturing through sustainable development, sustainability principles, and sustainable engineering. Topic 2 provides an overview of what Advanced Manufacturing (AM) is, what approaches are used, what the possible applications are, and what the limitations of the technology are. We focus on AM processes, principles, sustainability performance of AM, and sustainability

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assessment of AM at the macro- and micro-level. Students in the 500-level class will complete two different projects and students in the 400-level class will complete one project. The class projects include techno-economic and socio-environmental studies in the broad area of food-energy-water processes and systems.

2. Change the following course:

ENGR 220 Engineering Dynamics

3 credits

Particle and rigid body kinematics and kinetics; rectilinear, curvilinear, and relative motion, equations of motion, work and energy, impulse and momentum, systems of particles, rotation, rotating axes, rigid body analysis, angular momentum, vibration, and time response. Cooperative: open to WSU degree-seeking students.

Prereq: ENGR 210 [and MATH 175](#)

DEPARTMENT OF MECHANICAL ENGINEERING

1. Add the following course:

ME 495 Mechanics in Design and Manufacturing

3 credits

An examination of the mechanics of deformation, shaping, and forming of materials, and the manufacturing processes utilizing them. Discussion of the four main material classes, their properties and their applications. Topics include elasticity, plasticity, and continuous material flow, microstructural concerns, advanced material failure mechanisms, materials testing, and design for manufacture.

Prereq: ME 341

2. Change the following course:

ME 123 Introduction to Mechanical Design

3 credits

Introduction to engineering design process and analysis techniques including problem solving skills, development of software learning skills, graphical analysis, data analysis, and documentation skills. ~~Three lectures and one open 2-hour lab per week.~~ [The course includes lecture and lab periods each week.](#) (Fall only)

Coreq: ~~MATH 170~~ [MATH 143 AND MATH 144](#)

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DEPARTMENT OF NUCLEAR ENGINEERING

1. Add the following course:

NE 587 Nuclear Decommissioning

3 credits

Concepts and strategies for decommissioning nuclear facilities including project and program management, waste management, and site environmental restorations.

Prereq: NE 450

2. Create the following Graduate Certificate:

Nuclear Decommissioning and Used Fuel Management Academic Certificate

Before pursuing this certificate, students must have completed NE 450 (Principles of Nuclear Engineering) or have previous professional nuclear experience (e.g., nuclear navy, commercial power plant).

NE 516	Nuclear Rules and Regulations	3
NE 554	Radiation Detection and Shielding	3
NE 582	Spent Nuclear Fuel Management and Disposition	3
NE 587	Nuclear Decommissioning	3
Total Hours		12

Courses to total 12 credits for this certificate

COLLEGE OF NATURAL RESOURCES

DEPARTMENT OF ENVIRONMENTAL SCIENCE

1. Add the following courses:

ENVS 444 Water Quality in the Pacific Northwest

3 credits

Cross-listed with SOIL 444. Joint-listed with ENVS 544.

Qualitative aspects of water are covered in this class. Major topics are qualitative aspects of (1): surface water, (2) groundwater, (3) drinking water, (4) water in the oceans, and (5) the human waste

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stream. Concepts presented are relevant to world-wide water quality issues and concepts; however, an emphasis is placed on issues within the four Pacific Northwest states (ID, AK, OR, WA).

Prereq: Three upper-division science courses

ENVS 544 Water Quality in the Pacific Northwest

3 credits

Cross-listed with SOIL 544. Joint-listed with ENVS 444.

Qualitative aspects of water are covered in this class. Major topics are qualitative aspects of (1): surface water, (2) groundwater, (3) drinking water, (4) water in the oceans, and (5) the human waste stream. Concepts presented are relevant to world-wide water quality issues and concepts; however, an emphasis is placed on issues within the four Pacific Northwest states (ID, AK, OR, WA).

Prereq: Three upper-division science courses

2. Change the following courses:

ENVS 386 ~~Social-Ecological~~ Managing Complex Environmental Systems

3 credits

Cross-listed with NRS 386

~~Social-ecological~~ Complex environmental systems are comprised of interconnected social, economic, and environmental components. Explore ~~social-ecological~~ complex environmental systems frameworks and fundamental principles of sustainability in these social-ecological systems by examining theory and practice in case studies. Topics may include natural resource scarcity and human conflict, ecosystem service provision, management, and conservation, and land tenure, rights, and justice relating to human access to natural resources.

ENVS ~~446~~ 448 Drinking Water and Human Health

3 credits

Cross-listed with SOIL 448. Joint-listed with ENVS ~~546~~ 548.

Understand the characterization, testing, and treatment of chemical, microbial and hazardous compounds and their impact on human health. Be familiar with drinking water standards, regulatory aspects and protection of municipal, community, and private well systems. (Spring, Alt/years)

ENVS ~~546~~ 548 Drinking Water and Human Health

3 credits

Cross-listed with SOIL 548. Joint-listed with ENVS ~~446~~ 448.

Understand the characterization, testing, and treatment of chemical, microbial and hazardous compounds and their impact on human health. Be familiar with drinking water standards, regulatory aspects and protection of municipal, community, and private well systems. (Spring, Alt/years)

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DEPARTMENT OF FISH AND WILDLIFE SCIENCES

1. Change the following courses:

FISH 503 (s) Workshop

Credit arranged

Selected topics in the conservation and management of ~~natural resources~~ [fish and aquatic systems](#).
[Cooperative: open to WSU degree-seeking students.](#)

~~Prereq: Permission.~~

FISH 504 (s) Special Topics

Credit arranged

[New selected topics in the conservation and management of fish and aquatic systems. Cooperative: open to WSU degree-seeking students.](#)

FISH 510 Advanced Fishery ~~and Wildlife~~ Management

3 credits

Contemporary management of ~~marine and freshwater~~ fish and ~~shellfish~~ [wildlife](#) populations ~~of the world in North America~~. ~~Approaches, factors, and models used to manage commercial, recreational and subsistence fisheries;~~ [Guiding principles, relevant laws and policies, social and political aspects, select issues](#), and the policy interface of biological systems with governmental and social institutions. Cooperative: open to WSU degree-seeking students. (Spring, Alt/years)

WLF 503 (s) Workshop

Credit arranged

Selected topics in the conservation and management of ~~natural resources~~ [wildlife](#). [Cooperative: open to WSU degree-seeking students.](#)

WLF 504 (s) Special Topics

Credit arranged.

[New selected topics in the conservation and management of wildlife presented in a seminar or lecture format. Cooperative: open to WSU degree-seeking students.](#)

2. Make the following changes to the **B.S.Wildl.Res. in Wildlife Resources**:

Wildlife Resources (B.S.Wildl.Res.)

Students pursuing a B.S. in wildlife resources must have received a grade of C or better in each of the following four indicator courses to register in fish- and wildlife-prefixed upper-division courses and to graduate with a B.S. in wildlife resources: BIOL 114 and BIOL 213, STAT 251, and one of FOR 221, WLF 220 or NR 321.

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To graduate, a student must receive a grade of C or better in each fish- and wildlife-prefixed upper-division course listed in the requirements for the B.S. in wildlife resources.

Required course work includes the university requirements (see regulation J-3) and:

First and Second Years

BIOL 114	Organisms and Environments	4
BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
BIOL 213	Principles of Biological Structure and Function	4
CHEM 101	Introduction to Chemistry	3
CHEM 101L	Introduction to Chemistry Laboratory	1
CHEM 275	Carbon Compounds	3
or CHEM 277	Organic Chemistry I	
COMM 101	Fundamentals of Oral Communication	2
ECON 202	Principles of Microeconomics	3
FOR/REM	Principles of Ecology	3
221/WLF 220		
FOR 235	Society and Natural Resources	3
MATH 160	Survey of Calculus	4
or MATH 170	Calculus I	
NR 101	Exploring Natural Resources	2
STAT 251	Statistical Methods	3
WLF 102	The Fish and Wildlife Professions	1
WLF 201	Fish and Wildlife Applications	2
WLF 370	Management and Communication of Scientific Data	2
Select one of the following:		3-4
FOR 220	Forest Biology & Dendrology	
REM 341	Systematic Botany	
REM 252	Wildland Plant Identification	
& REM 253	and Wildland Plant Identification Field Studies	
Select one of the following:		4
GEOL 101	Physical Geology	
& 101L	and Physical Geology Lab	
PHYS 100	Fundamentals of Physics	
& 100L	and Fundamentals of Physics Lab	
PHYS 111	General Physics I	
& 111L	and General Physics I Lab	
SOIL 205	The Soil Ecosystem	
& SOIL 206	and The Soil Ecosystem Lab	
Third and Fourth Years		
BIOL 310	Genetics	3
or GENE 314	General Genetics	

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FISH 398	Renewable Natural Resources Internship	2
or WLF 398	Renewable Natural Resources Internship	
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
NRS 383	Natural Resource and Ecosystem Service Economics	3
WLF 314	Ecology of Terrestrial Vertebrates	3
WLF 315	Techniques Laboratory	2
WLF 371	Physiological Ecology of Wildlife	2
WLF 411	Wildland Habitat Ecology and Assessment	2
WLF 440	Conservation Biology	3
WLF 448	Fish and Wildlife Population Ecology	4
WLF 492	Wildlife Management	4
Select one of the following:		2-3
COMM 410	Conflict Management	
FOR 484	Forest Policy and Administration	
NRS 250	Environmental Problem Solving	
NRS 386	Social Ecological Systems	
NRS 387	Environmental Communication Skills	
NRS 462	Natural Resource Policy	
NRS 311	Public Involvement in Natural Resource Management	
SOC 465	Environment, Policy, and Justice	
WLF 205	Wildlife Law Enforcement	
Select two Restricted elective courses from the following (must receive a grade of 'C' or better):		7-8
BIOL 483	Mammalogy	
BIOL 489	Herpetology	
FISH 481	Ichthyology	
WLF 482	Ornithology	
Total Hours		91-94

Courses to total 120 credits for this degree

DEPARTMENT OF FOREST, RANGELAND, AND FIRE SCIENCES

1. Create the following prefix to replace the RMAT prefix:

FSP (Forest and Sustainable Products)

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2. Add the following course:

REM 520 Advanced Vegetation Measurement and Monitoring

3 credits

This course introduces theory and application of quantitative and qualitative methods for measuring and monitoring vegetation in grasslands, shrublands, woodlands, and forests. Students will gain a solid understanding of how to measure and evaluate vegetation attributes and design and implement monitoring programs relative to wildlife habitat, livestock forage, fire fuel characteristics, watershed function, and many other wildland values. Advanced Vegetation Measurements and Monitoring includes a 1-hr weekly discussion of current literature on vegetation measurements and the use of monitoring data for natural resource decision making. Recommended Preparation: A basic understanding of how to use computer spreadsheets such as Excel. Students are encouraged to also enroll in REM 460 for field experience in collecting vegetation data that will be used in this course. (Fall only)

3. Change the following courses:

~~RMAT FSP 100~~ Intro to ~~Renewable Resources~~ Forest & Sustainable Products

2 credits

~~Overview of renewable building materials and bio-energy industries. Discovery laboratory in the use of renewable and recycled waste stream materials to create useful products.~~ Examination of the forest and sustainable materials industries and bioenergy products. Discovery laboratory in the use of forest and sustainable materials, including waste streams, to create marketable products. One lecture and one three-hour lab per week. ~~(Spring only)~~

~~RMAT FSP 321~~ Properties of ~~Renewable Materials~~ Forest and Sustainable Products

3 credits

Physiology, structure, and physical and mechanical properties of woody and other ~~renewable plant materials~~ natural cellulosic fibers. ~~(Fall only)~~

~~RMAT FSP 444~~ Primary Forest Products Manufacturing

3 credits

Raw materials, procurement, production methods, drying product specifications, and grading for primary products made from ~~renewable materials~~ wood and cellulosic fiber including lumber, plywood, poles, and energy products; plant layout, machines, and systems analysis; plant tours. Two lectures and one 5-hour lab per week. ~~(Spring only)~~

Prereq: RMAT 321

~~RMAT FSP 450~~ Biomaterials Deterioration and Protection

~~2~~ 3 credits

~~Agents that cause deterioration of biomaterials; green building durability issues and design considerations; preservative systems and alternative control methods; and environmental~~

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~~considerations.~~ [Biotic and abiotic agents that deteriorate biomaterials; biocidal and nonbiocidal methods used to protect biomaterials from deterioration; biodegradable materials and their applications. Two one-hour lectures and one three-hour lab per week.](#) Recommended preparation: RMAT 321 ~~(Fall-only)~~

RMAT FSP 498 Renewable Natural Resources Forest and Sustainable Products Internship **Credit arranged**

Supervised field experience with an appropriate ~~organization~~ [public agency or private company](#).
Graded P/F. ~~(Summer-only)~~

Prereq: Permission of advisor

REM 410 Principles of Vegetation Monitoring and Measurement

2 credits

This course introduces theory and application of quantitative and qualitative methods for measuring and monitoring vegetation in grasslands, shrublands, woodlands, and forests. Students will gain a solid understanding of how to measure and evaluate vegetation attributes and design and implement monitoring programs relative to wildlife habitat, livestock forage, fire fuel characteristics, watershed function, and many other wildland values. ~~Class field trip required.~~ Recommended Preparation: A basic understanding of how to use computer spreadsheets such as Excel. ~~Students are encouraged to also enroll in REM 411 which builds on the principles of REM 410 for wildland habitat assessment.~~ [Students are encouraged to also enroll in REM 460 for field experience in collecting vegetation data that will be used in this course.](#) [Graduate students should enroll in REM 520 – Advanced Vegetation Measurements and Monitoring.](#) (Fall only)

REM 459 Rangeland Ecology

2 ~~3~~ credits

Application of ecological principles in rangeland management; stressing response and behavior of range ecosystems to various kinds and intensity of disturbance and management practice. Recommended Preparation: courses in general ecology (e.g., REM 221), technical writing (e.g., ENGL 317), and vegetation assessment (e.g., REM 410 or FOR 274) or Permission. [Students are encouraged to also enroll in REM 460 for field experience in collecting vegetation data that will be used in this course.](#) ~~(Fall-only)~~

REM 460 ~~Integrating GIS and~~ Field Studies in Rangelands

2 ~~1~~ credit

~~Topics related to changing knowledge and technology related to GIS and spatial analysis relevant to ecology of grasslands, shrublands and woodlands. Min. six integrated GIS labs; one five-day field trip.~~ [Field experiences in rangeland ecology, vegetation measurements, and habitat assessment. The course consists of preparatory lectures and a four-day field trip to rangelands. The course integrates concepts from Principles of Vegetation Monitoring and Measurement \(REM410\), Wildland Habitat Ecology and Assessment \(REM 411\), and Rangeland Ecology \(REM 459\). Students should take this course concurrently with or before REM 410, REM411 and REM 459.](#) Required for REM majors. (Fall only)

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Prereq: [Permission](#)

Coreq: ~~REM 459.~~

4. Make the following changes to the **B.S.Fire.Ecol.Mgmt in Fire Ecology and Management**:

Fire Ecology and Management (B.S.Fire.Ecol.Mgmt.)

Students pursuing a B.S. degree in Fire Ecology and Management must receive a grade of 'C' or better in the following indicator courses to register for upper-division courses in the fire core and to graduate with a B.S.Fire.Ecol.Mgmt.:

Fire Core

MATH 143	College Algebra	3
STAT 251	Statistical Methods	3
REM 144	Wildland Fire Management	3
FOR/REM 221	Principles of Ecology	3
FOR 274	Forest Measurement and Inventory	3

Students must also have a minimum cumulative grade-point average of 2.00 in Forest Resource and Rangeland Ecology and Management courses to qualify for the B.S. degree in Fire Ecology and Management.

Required course work includes the university requirements (see regulation J-3) and:

ECON 202	Principles of Microeconomics	3
ENGL 313	Business Writing	3
or ENGL 317	Technical Writing	
FOR 221	Principles of Ecology	3
FOR 235	Society and Natural Resources	3
FOR 274	Forest Measurement and Inventory	3
FOR 326	Fire Ecology and Management	3
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
FOR 427	Prescribed Burning Lab	3
FOR 433	Fire and Fuel Modeling	2
FOR 435	Remote Sensing of Fire	3
or REM 429	Landscape Ecology	
FOR 450	Fire Behavior	2
FOR 484	Forest Policy and Administration	2
MATH 143	College Algebra	3-4
or MATH 160	Survey of Calculus	
NR 101	Exploring Natural Resources	2

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NRS 383	Natural Resource and Ecosystem Service Economics	3
PHYS 100	Fundamentals of Physics	3
PHYS 100L	Fundamentals of Physics Lab	1
PLSC 205	General Botany	4
REM 144	Wildland Fire Management	3
REM 407	GIS Application in Fire Ecology and Management	2
REM 459	Rangeland Ecology	2 3
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
STAT 251	Statistical Methods	3
Select one of the following:		3-4
FOR 330	Forest Soil and Canopy Processes	
FOR 424	Silviculture Principles and Practices	
REM 456	Integrated Rangeland Management	
Select one of the following:		4
BIOL 114	Organisms and Environments	
BIOL 115	Cells & the Evolution of Life	
& 115L	and Cells and the Evolution of Life Laboratory	
Select one of the following:		4
CHEM 101	Introduction to Chemistry	
& 101L	and Introduction to Chemistry Laboratory	
CHEM 111	General Chemistry I	
& 111L	and General Chemistry I Laboratory	
Select one of the following:		3
FOR 454	Air Quality, Pollution, and Smoke	
GEOG 301	Meteorology	
GEOG 313	Global Climate Change	
Select one of the following:		3-4
FOR 220	Forest Biology & Dendrology	
REM 252	Wildland Plant Identification	
REM 341	Systematic Botany	
Advisor Approved Electives or Approved Minor		15-21
–Rangeland Ecology and Management		
–Forest Resources		
–Natural Resource Conservation		
–Natural Resources Economics		
–Fishery Resources		
–Wildlife Resources		
–Ecology		
–Forest Operations		
–Renewable Materials		
Total Hours		95-104 <u>77-80</u>
Courses to total 120 credits for this degree		

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5. Make the following changes to the **B.S.Rangeland.Consv. in Rangeland Conservation**:

Rangeland Conservation (B.S.Rangeland.Consv.)

This major prepares students to conserve, restore, and manage the vast landscapes known as rangelands. These ecosystems include deserts, prairies, shrublands, and woodlands. The degree program focuses on the scientific study of rangelands and introduces principles for managing and restoring rangelands for maximum benefit and ecosystem sustainability.

Required course work includes the university requirements (see regulation J-3) and:

First and Second Years

AVS 109 or AVS 110	The Science of Animals that Serve Humanity Science of Animal Husbandry	3-4
BIOL 114	Organisms and Environments	4
BIOL 213 or PLSC 205	Principles of Biological Structure and Function General Botany	4
COMM 101	Fundamentals of Oral Communication	2
ECON 202	Principles of Microeconomics	3
FOR/ REM 221 / WLF 220 or NR 321	Principles of Ecology Ecology	3
FOR 235	Society and Natural Resources	3-4
MATH 143 or MATH 160	College Algebra Survey of Calculus	3
NR 101	Exploring Natural Resources	2
REM 151	Rangeland Principles	3
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
STAT 251	Statistical Methods	3
REM 252	Wildland Plant Identification	2
REM 253	Wildland Plant Identification Field Studies	1
Select one of the following:		4
CHEM 101 & 101L	Introduction to Chemistry and Introduction to Chemistry Laboratory	
CHEM 111 & 111L	General Chemistry I and General Chemistry I Laboratory	
Third and Fourth Years		
ENGL 313 or ENGL 317	Business Writing Technical Writing	3
FISH 430 or FOR 462	Riparian Ecology and Management Watershed Science and Management	3

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FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
NRS 383	Natural Resource and Ecosystem Service Economics	3
REM 341	Systematic Botany	3
REM 410	Principles of Vegetation Monitoring and Measurement	2
REM 411	Wildland Habitat Ecology and Assessment	2
REM 456	Integrated Rangeland Management	3
REM 459	Rangeland Ecology	2 <u>3</u>
REM 460	Integrating GIS and Field Studies in Rangelands	2 <u>1</u>
SOIL 454	Pedology	3
Select one of the following:		3-4
REM 280	Introduction to Wildland Restoration	
& PLSC 419	and Plant Community Restoration Methods	
REM 440	Restoration Ecology	
Career Tracks with Advisor Input and Approval		15
Total Hours		91-94

Students must also complete 15 credits of advisors approved electives contributing to a specific career track that may include:

RESTORATION ECOLOGY - Millions of acres of rangeland and forests have been disturbed by fire, invasive plants, and overgrazing. Academic advisors in rangeland conservation have developed a set of electives for students interested in a career in wildland restoration. Completing these career track electives will fulfill requirements for the Restoration Ecology Undergraduate Academic Certificate. Careful selection of courses can also highlight expertise in botany and plant materials to qualify for professions as a botanist.

WILDLIFE HABITAT - Many species of wildlife live on rangelands and the management of wildlife habitat is an important and sought after skill. With help from their Academic Advisor, rangeland students can complete a career track that will show expertise in wildlife habitat management and fulfill the requirements for a Minor in Wildlife Resources.

LAND AND LIVESTOCK - This career track is for students interested in “hands-on” management of rangelands. Academic Advisors work with students to select courses that provide the knowledge and skills needed to manage rangelands with grazing and fire to enhance livestock production while sustaining communities of native plants and animals. Completion of these courses can also satisfy the requirements for a Minor in Animal Science or Soil Science.

WILDLAND FIRE - Wildfire is one of the major forces causing change on rangeland ecosystems. Completing a specific set of advisor approved electives, will enable students to show knowledge of land management related to wildland fire and fulfill the requirements for a Minor in Fire Ecology and Management.

INDIVIDUAL INTEREST – Students can work with their advisor to select specific courses to show expertise in a career track of specific interest that may include Watershed or Riparian Ecologist, Natural Resource GIS Specialist, Environmental Consultant, Tribal Land Manager, Resource Economist, or many other interests related to rangelands.

Courses to total 122 credits for this degree

6. Make the following changes to the Restoration Ecology Undergraduate Academic Certificate:

Restoration Ecology Undergraduate Academic Certificate

FOR/REM 221/WLF 220	Principles of Ecology	3
or NR 321	Ecology	
REM 280	Introduction to Wildland Restoration	2
REM 440	Restoration Ecology	3
REM 459	Rangeland Ecology	2
SOIL 205	The Soil Ecosystem	3
Select one of the following:		2-3
FOR 324	Forest Regeneration	
FOR 326	Fire Ecology and Management	
FOR 426	Global Fire Ecology and Management	
FOR 451	Fuels Inventory and Management	
LARC 480	The Resilient Landscape	
PLSC 338	Weed Control	
PLSC 410	Invasive Plant Biology	
PLSC 419	Plant Community Restoration Methods	
REM 407	GIS Application in Fire Ecology and Management	
REM 429	Landscape Ecology	
SOIL 438	Pesticides in the Environment	
SOIL 454	Pedology	
WLF 440	Conservation Biology	
Total Hours		15-16

Courses to total 16 credits for this certificate

7. Make the following changes to the **B.S.Renew.Mat. in Renewable Materials**:

~~**Renewable Materials (B.S.Renew.Mat.)**~~
Forest and Sustainable Products (B.S.)

The ~~Renewable Materials~~ **Forest and Sustainable Products** degree program is designed to fill the growing demand for professionals in the manufacture, marketing, and utilization of sustainable natural materials. Interdisciplinary coursework and project-based learning opportunities lead to a variety of career directions, including procurement of timber and other renewable materials;

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production management, marketing and distribution of bio-based products; green building materials selection, construction and design; and bio-based energy production systems.

Required course work includes the university requirements (see regulation J-3) and:

ACCT 201	Introduction to Financial Accounting	3
ACCT 202	Introduction to Managerial Accounting	3
ACCT 482	Enterprise Accounting	3
BIOL 102	Biology and Society	3
BIOL 102L	Biology and Society Lab	1
BLAW 265	Legal Environment of Business	3
CHEM 275	Carbon Compounds	3
or CHEM 277	Organic Chemistry I	
COMM 101	Fundamentals of Oral Communication	2
ECON 202	Principles of Microeconomics	3 4
Or ECON 272	Foundations of Economic Analysis	
ENGL 313	Business Writing	3
or ENGL 317	Technical Writing	
FOR 221/ REM 221 / WLF 220	Principles of Ecology	3
FOR NRS 235	Society and Natural Resources	3
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
MATH 160	Survey of Calculus	4
or MATH 170	Calculus I	
NR 101	Exploring Natural Resources	2
NRS 383	Natural Resource and Ecosystem Service Economics	3
PHYS 111	General Physics I	3
PHYS 111L	General Physics I Lab	1
RMAT FSP 100	Intro to Renewable Resources	2
RMAT FSP 321	Properties of Renewable Materials	3
RMAT FSP 401	Undergraduate Research	1-3
RMAT FSP 436	Biocomposites	3
RMAT FSP 438	Introduction to Lignocellulosic Chemistry	1
RMAT FSP 444	Primary Products Manufacturing	3
RMAT FSP 450	Biomaterials Deterioration and Protection	2 3
RMAT FSP 491	Biomaterial Product and Process Development Lab	2
RMAT FSP / MKTG 495	Product Development and Brand Management	3
RMAT FSP 498	Renewable Natural Resources Internship	1-16
STAT 251	Statistical Methods	3
Select one of the following:		4

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CHEM 101 Introduction to Chemistry
& 101L and Introduction to Chemistry Laboratory
CHEM 111 General Chemistry I
& 111L and General Chemistry I Laboratory

~~Second major, academic minor, or area of Emphasis⁴~~

~~18~~

Total Hours

~~88-105~~ **72-90**

Courses to total 120 credits for this degree

~~Degree candidates are required to complete a second major, an academic minor or area of emphasis of at least 18 credits. The emphasis area must be approved by the student's academic advisor.~~

DEPARTMENT OF NATURAL RESOURCES AND SOCIETY

1. Add the following courses:

NRS 478 LIDAR and Optical Remote Sensing Analysis

3 credits

Joint-listed with NRS 578.

LIDAR and optical remote sensing data play a key role in natural resource and environmental research and management. Students will use open-source software to efficiently and effectively work with optical and LIDAR remote sensing datasets. Topics include introduction to open-source software for LIDAR and optical remote sensing analysis, acquisition and pre-processing of optical and LIDAR remote sensing data, and remote sensing analysis approaches that allow conversion of remotely sensed data into management/research relevant information. This course focuses on development and application of practical skills through project-based learning. For graduate credit, primary literature review, discussion, and a class project including evaluation and write-up of unique and advanced datasets is also required.

Prereq: STAT 251 and WLF 370; or STAT 427 and NRS/FOR 472

NRS 488 NEPA in Policy and Practice

3 credits

Joint-listed with NRS 588

In-depth review of the National Environmental Policy Act (NEPA), its legislative background and history, significant case law, and Council of Environmental Quality (CEQ) Guidelines. Students will review examples of agency Categorical Exclusions, Environmental Assessments, and Environmental Impact Statements. Students will evaluate whether specific documents "meet the intent or spirit" of NEPA, compare state vs. federal NEPA regulations, and review at least one federal agency's NEPA procedures.

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NRS 556 Team Leadership for Environmental Educators

1 credit

This course provides participants with the theoretical understandings and practical tools needed to develop an effective leadership practice. Students will be asked to build upon their life experience and their experience at MOSS to provide context for discussions and practice. Topics to be covered include group dynamics, strengths-based personal development, conflict resolution, and a survey of popular leadership theory. Offered only in McCall, offered only in Fall.

NRS 557 Community Leadership for Environmental Educators

1 credit

This course explores the leadership theories and tools needed to create culture, build trust, and maintain efficiencies within small and large organizations. In particular, it will explore how organizations and teams confront change in order to find success. Students will be asked to build upon their life experience and their experience at MOSS to provide context for discussions and practice. Offered only in McCall, only offered spring.

NRS 576 Environmental Project Management and Decision Making

2 credits

Integrated, interdisciplinary approaches to environmental project and program management and decision making. Emphasis on environmental planning techniques, scenario development, analysis, and application of geospatial tools such as GIS and remote sensing. Direct experience and basic skills for project and program development and evaluation.

NRS 578 LIDAR and Optical Remote Sensing Analysis

3 credits

Joint-listed with NRS 478.

LIDAR and optical remote sensing data play a key role in natural resource and environmental research and management. Students will use open-source software to efficiently and effectively work with optical and LIDAR remote sensing datasets. Topics include introduction to open-source software for LIDAR and optical remote sensing analysis, acquisition and pre-processing of optical and LIDAR remote sensing data, and remote sensing analysis approaches that allow conversion of remotely sensed data into management/research relevant information. This course focuses on development and application of practical skills through project-based learning. For graduate credit, primary literature review, discussion, and a class project including evaluation and write-up of unique and advanced datasets is also required.

Prereq: STAT 251 and WLF 370; or STAT 427 and NRS/FOR 472

NRS 588 NEPA in Policy and Practice

3 credits

Joint-listed with NRS 488

In-depth review of the National Environmental Policy Act (NEPA), its legislative background and history, significant case law, and Council of Environmental Quality (CEQ) Guidelines. Students will review examples of agency Categorical Exclusions, Environmental Assessments, and Environmental

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Impact Statements. Students will evaluate whether specific documents "meet the intent or spirit" of NEPA, compare state vs. federal NEPA regulations, and review at least one federal agency's NEPA procedures.

2. Drop the following course:

NRS 385 Conservation Management and Planning - I

4 credits

Theory and practice of decision-making for conservation planning and management, including protected areas, working landscapes, conservation organizations and the challenges facing natural resource managers in the 21st Century. Field trips and a collaborative group community Service-Learning project are required. (Fall only)

3. Change the following courses:

NRS 386 ~~Social-Ecological~~ Managing Complex Environmental Systems

3 credits

Cross-listed with ENVS 386.

~~Social-ecological~~ Complex environmental systems are comprised of interconnected social, economic, and environmental components. Explore ~~social-ecological~~ complex environmental systems frameworks and fundamental principles of sustainability in these social-ecological systems by examining theory and practice in case studies. Topics may include natural resource scarcity and human conflict, ecosystem service provision, management, and conservation, and land tenure, rights, and justice relating to human access to natural resources.

NRS 476 Environmental Project Management and Decision Making

4 credits

Gen Ed: Senior Experience

Integrated, interdisciplinary approaches to project and program management and decision making. Emphasis on environmental planning techniques, scenario development, analysis, and application of geospatial tools such as GIS and remote sensing. Direct experience and basic skills for project and program development and evaluation.

~~Prereq: NRS 311.~~

4. Make the following changes to the **B.S.Nat.Resc.Consv. in Natural Resource Conservation**:

Natural Resource Conservation (B.S.Nat.Resc.Consv.)

Required Course work includes the university requirements (see regulation J-3) and:

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ECON 202	Principles of Microeconomics	3
FOR 221	Principles of Ecology	3
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
NR 101	Exploring Natural Resources	2
NRS 125	Introduction to Conservation and Natural Resources	3
NRS 235	Society and Natural Resources	3
NRS 310	Social Science Methods	4
NRS 311	Public Involvement in Natural Resource Management	3
NRS 383	Natural Resource and Ecosystem Service Economics	3
NRS 387	Environmental Communication Skills	3
NRS 498	Internship	1-6
STAT 251	Statistical Methods	3
Select one of the following:		3-4
MATH 143	College Algebra	
MATH 160	Survey of Calculus	
MATH 170	Calculus I	
Emphases		
Select one of the following emphases:		50-72
Conservation Planning and Management		
Conservation Science		
Total Hours		87-115

A. Conservation Planning and Management Emphasis

To graduate a student must earn an average GPA 2.30 or higher in all NRS courses.

COMM 101	Fundamentals of Oral Communication (or One semester of a foreign language course)	2-4
ENGL 207	Persuasive Writing	3
or ENGL 208	Personal & Exploratory Writing	
ENVS 225	International Environmental Issues Seminar	3
or IS 322	International Environmental Organizations	
NRS 364	Politics of the Environment	3
NRS 462	Natural Resource Policy	3
NRS 475	Local and Regional Environmental Planning	3
NRS 476	Environmental Project Management and Decision Making	4
POLS 101	American National Government	3
or POLS 275	American State and Local Government	
PSYC 101	Introduction to Psychology	3
SOC 101	Introduction to Sociology	3
Select one of the following:		4
BIOL 102	Biology and Society	
& 102L	and Biology and Society Lab	

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BIOL 115 & 115L	Cells & the Evolution of Life and Cells and the Evolution of Life Laboratory	
Select one of the following:		3
ENGL 313	Business Writing	
ENGL 316	Environmental Writing	
ENGL 317	Technical Writing	
ENGL 322	Studies in Environmental Literature and Culture	
Select one of the following:		3
AGEC 477	Law, Ethics and the Environment	
ENVS 479	Introduction to Environmental Regulations	
NRS 386	Social-Ecological Systems	
Select one of the following:		4
CHEM 101 & 101L	Introduction to Chemistry and Introduction to Chemistry Laboratory	
CHEM 111 & 111L	General Chemistry I and General Chemistry I Laboratory	
GEOL 101 & 101L	Physical Geology and Physical Geology Lab	
Select one of the following:		3-4
NRS/FOR 472	Remote Sensing of the Environment	
FOR 435	Remote Sensing of Fire	
NRS/REM 440	Restoration Ecology	
NRS 478	LIDAR and Optical Remote Sensing Analysis	
Select one of the following:		3-4
BIOL 314	Ecology and Population Biology	
FOR 326	Fire Ecology and Management	
NRS 450	Global Environmental Change	
REM 429	Landscape Ecology	
REM 340	Ethnobotany	
REM 459 & REM 460	Rangeland Ecology and Integrating GIS and Field Studies in Rangelands	
WLF 370	Management and Communication of Scientific Data	
WLF 440	Conservation Biology	
Contract Courses ¹		12-18
Total Hours		62-72

Courses to total 120 credits for this degree

¹ Students must submit a contract for a minimum of 12 credits, completed through prior consultation and approval from the faculty advisor. Courses taken to fulfill major requirements above cannot be double counted for contract courses. All contract courses must be upper division (University of Idaho 3xx, 4xx, or 5xx level courses).

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Students may fulfill their contract requirement by completing a University approved minor, certificate, or approved study abroad experience. Students are encouraged to make choices that strengthen their expertise and demonstrate proficiency in an area of professional interest. See the University of Idaho General Catalog for a list of approved minors and certificates.

(<http://www.uidaho.edu/registrar/classes/catalogs>)

B. Conservation Science Emphasis.

To graduate a student must earn an average GPA of 2.00 or higher in all courses taught in the College of Natural Resources and complete an approved professional work experience in natural resources.

NRS 364	Politics of the Environment	3
or NRS 462	Natural Resource Policy	
Select one writing course:		3
ENGL 207	Persuasive Writing	
ENGL 208	Personal & Exploratory Writing	
ENGL 313	Business Writing	
ENGL 316	Environmental Writing	
ENGL 317	Technical Writing	
Select one of the following:		3-4
NRS 475	Local and Regional Environmental Planning	
NRS 476	Environmental Project Management and Decision Making	
NRS 490	Wilderness and Protected Area Management	
Select one of the following:		4
CHEM 101	Introduction to Chemistry	
& 101L	and Introduction to Chemistry Laboratory	
CHEM 111	General Chemistry I	
& 111L	and General Chemistry I Laboratory	
Select one of the following:		4
BIOL 114	Organisms and Environments	
BIOL 115	Cells & the Evolution of Life	
& 115L	and Cells and the Evolution of Life Laboratory	
Natural Resource Science Restricted Electives		33
Select 33 credits of Natural Resource Science Restricted electives from the following (at least 15 credits must be at the 400-level):		
<i>Fishery Science</i>		
Select at least 6 credits from the following:		
FISH 314	Fish Ecology	
FISH 315	Fish Ecology Field Techniques and Methods	
FISH 415	Limnology	
FISH 418	Fisheries Management	
FISH 422	Concepts in Aquaculture	

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FISH 424	Fish Health Management
FISH 430	Riparian Ecology and Management

Fire Ecology and Management

Select at least 2 credits from the following:

FOR 326	Fire Ecology and Management
FOR 433	Fire and Fuel Modeling
FOR 450	Fire Behavior
FOR 454	Air Quality, Pollution, and Smoke

Forestry and Renewable Materials

Select at least 9 credits from the following:

FOR 220	Forest Biology & Dendrology
FOR 275	Forestry Resource Sampling
FOR 324	Forest Regeneration
FOR 330	Forest Soil and Canopy Processes Terrestrial Ecosystem Ecology
FOR 424	Silviculture Principles and Practices
FOR 430	Forest Operations
FOR 431	Low Volume Forest Roads
FOR 436	Cable Systems
FOR 462	Watershed Science and Management
FOR 468	Forest and Plant Pathology
FOR 472	Remote Sensing of the Environment
RMAT 321	Properties of Renewable Materials
RMAT 436	Biocomposites
RMAT 438	Introduction to Lignocellulosic Chemistry
RMAT 444	Primary Products Manufacturing
RMAT 450	Biomaterials Deterioration and Protection
RMAT 491	Biomaterial Product and Process Development Lab
RMAT/MKTG 495	Product Development and Brand Management

Rangeland Ecology and Management

Select at least 6 credits from the following:

REM 341	Systematic Botany
REM 410	Principles of Vegetation Monitoring and Measurement
REM 411	Wildland Habitat Ecology and Assessment
REM 429	Landscape Ecology
REM 440	Restoration Ecology
REM 452	Western Wildland Landscapes
REM 456	Integrated Rangeland Management
REM 459	Rangeland Ecology
REM 460	Integrating GIS and Field Studies in Rangelands

Wildlife Science

Select at least 6 credits from the following:

WLF 314	Ecology of Terrestrial Vertebrates
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WLF 315	Techniques Laboratory	
WLF 370	Management and Communication of Scientific Data	
WLF 440	Conservation Biology	
WLF 448	Fish and Wildlife Population Ecology	
WLF 482	Ornithology	
WLF 492	Wildlife Management	
Total Hours		50-51

Courses to total 120 credits for this degree

5. Discontinue the following minor:

Parks, Protected Areas, and Wilderness Conservation Minor

BIOL 314	Ecology and Population Biology	4
or FOR 221	Principles of Ecology	
NRS 490	Wilderness and Protected Area Management	3
or NRS 493	International Land Preservation and Conservation Systems	
WLF 440	Conservation Biology	3
Select 11 credits from the following:		11
AIST 401	Contemporary American Indian Issues	
GEOG 420	Land, Resources, and Environment	
HIST 424	American Environmental History	
NRS 304	Conservation Social Sciences Field Studies	
NRS 386	Social-Ecological Systems	
NRS 475	Local and Regional Environmental Planning	
NRS 490	Wilderness and Protected Area Management	
NRS 493	International Land Preservation and Conservation Systems	
NRS 496	Monitoring Impacts in Protected Areas and Wilderness	
PHIL 452	Environmental Philosophy	
Total Hours		21

Courses to total 21 credits for this minor

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Carries no credit after BIOL 250. May be taken by microbiology majors, but carries no credit after BIOL 250. Introduction to microorganisms and their role in disease, health, foods, and the environment; current topics in microbiology. (Spring only)

BIOL 155 Introductory Microbiology Laboratory

1 credits

Gen Ed: Natural and Applied Sciences

May be taken by microbiology majors but carries no credit after BIOL 255. Introductory laboratory training in basic microbiology; includes sterile technique, bacterial enumeration methods, culturing techniques, yogurt preparation and analysis, recombinant DNA techniques. Three hrs lab a wk. (Spring only)

Coreq: BIOL 154

BIOL 405 Practicum in Anatomy Laboratory Teaching

2-4 credits, max 8

Gen Ed: Senior Experience

Organization, preparation, and teaching of anatomy laboratory objectives under faculty supervision. (Fall only)

Prereq: Permission

2. Change the following courses:

BIOL 102 Biology and Society

3 credits

Gen Ed: Natural and Applied Sciences

Not open to majors or for minor credit [in the department of Biological Sciences. Study of ecology, evolution, cells, heredity, and human body processes with a focus on connecting to issues in society.](#) ~~Principles of biology and their relationship to social issues.~~ Three lectures ~~and one 3-hour lab~~ per week.

BIOL 102L Biology and Society Lab

1 credit

Gen Ed: Natural and Applied Sciences

Not open to ~~Biology~~ majors or for minor credit [in the department of Biological Sciences. The lab follows Biology 102 lecture topics and offers hands-on practice and experimentation with core course concepts. It is strongly recommended that the lecture and lab be taken in the same semester.](#) ~~Principles of biology and their relationship to social issues. Three lectures and o~~ One 3-hour lab per week.

BIOL 114 Organisms and Environments

4 credits

Gen Ed: Natural and Applied Sciences

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~~The evolution of diversity, the biology of plants and animals, and their environments.~~ [Topics include an overview of ecology and a detailed foundation in evolutionary processes and the diversity of life; intended for students in biology-related majors.](#) Three lectures and one 3-hour lab per week.

BIOL 115 Cells & the Evolution of Life

3 credits

Gen Ed: Natural and Applied Sciences

~~The cell, heredity and evolutionary processes.~~ [This course provides a detailed foundation of biomolecules, the cell, metabolism, and heredity; intended for students in biology-related majors. Three lectures per week.](#)

Prereq-~~or~~ Coreq: CHEM 101 and CHEM 101L or CHEM 111 and CHEM 111L

BIOL ~~120-227~~ Human Anatomy [Anatomy & Physiology I](#)

4 credits

~~Study of the anatomy of the major organ systems of the human body; lab consists of studying human gross anatomy models and prosected cadavers.~~ [Study of the general organization of the human body and its function, followed by more specific study of the anatomy and physiology of the integumentary, skeletal, muscular, cardiovascular, and respiratory systems. Labs include anatomical models, prosected cadavers, and physiological data collection software.](#) Three lectures and one 3-hour lab per wk. (Fall only)

Prereq: [BIOL 102 or BIOL 115](#)

BIOL ~~121-228~~ Human Physiology [Anatomy & Physiology II](#)

4 credits

~~Study of the physiology of the major organ systems of the human body.~~ [Continuation of the study of the organization of the human body and its function, including specific study of the anatomy and physiology of the nervous, endocrine, digestive, urinary, and reproductive systems. Labs include anatomical models, prosected cadavers, and physiological data collection software.](#) Three lectures and one 3-hour lab per week. (Spring only)

Prereq: BIOL ~~120~~[220](#)

BIOL 301 Undergraduate Research

~~1-4~~ **0-4 credits, max 8**

Undergraduate research for students without senior standing. [BIOL 301 cannot be used for upper-division elective requirement credit in degrees offered by the Department of Biological Sciences.](#)

Prereq: Permission

BIOL 401 Undergraduate Research

1-4 credits, max 8

Gen Ed: Senior Experience

Undergraduate research at the senior level. [BIOL 401 cannot be used for major upper-division elective requirement credit in degrees offered by the Department of Biological Sciences.](#)

Prereq: Senior Standing and Permission of Instructor

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BIOL 408 ~~Practicum in Human Physiology Laboratory Teaching~~ Human Anatomy & Physiology Laboratory Pedagogy

2-4 credits, max 8

Gen Ed: Senior Experience

~~Organization, preparation, and teaching of human physiology laboratory objectives under faculty supervision. (Spring only)~~ Developing presentations, learning assessments, and grading schemas for undergraduate anatomy and physiology courses. Includes specimen preparation, data collection and analysis. Fall and Spring semester/variable credit. 2 credits per each 3-hour lab per week, one-hour lab meeting per week.

Prereq: ~~BIOL 121 and~~ Instructor Permission

BIOL 456 Computer Skills for Biologists

3 credits

Joint-listed with BIOL 549

~~Management and analysis of complicated datasets such as those in molecular evolution, systematics, and genomics. Demonstrations, exercises, and student projects to teach advanced Unix skills, programming (e.g. Perl and R), and data management. Cooperative: open to WSU degree-seeking students. (Fall, alt/even yrs)~~ Exploration and analysis of biological datasets such as those in molecular evolution, systematics, and genomics. Demonstrations, exercises, and student projects to teach Unix skills, git version control, and computer programming for data exploration and analysis. Graduate credit requires a project and presentation. Cooperative: open to WSU degree-seeking students. (Fall, alt/even years)

Prereq: BIOL 310 and STAT 251 or STAT 301; or Permission

BIOL 545 ~~Principles of Systematic Biology~~ Phylogenetics

3 credit

The inference of evolutionary trees (phylogeny) and the processes that generate biodiversity from analyses of morphological, molecular, and behavioral data; uses of phylogenies in testing evolutionary and other hypotheses at both inter and intraspecific levels. Two hours of lecture and one 3-hour lab per week. Cooperative: open to WSU degree-seeking students. (Spring, Alt/years)

Prereq: PLSC 205 or BIOL 213 and BIOL 310

BIOL 549 Computer Skills for Biologists

3 credits

Joint-listed with BIOL 456

~~Management and analysis of complicated datasets such as those in molecular evolution, systematics, and genomics. Demonstrations, exercises, and student projects to teach advanced Unix skills, programming (e.g. Perl and R), and data management. Cooperative: open to WSU degree-seeking students. (Fall, alt/even yrs)~~ Exploration and analysis of biological datasets such as those in molecular evolution, systematics, and genomics. Demonstrations, exercises, and student projects to teach Unix skills, git version control, and computer programming for data exploration and analysis.

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[Graduate credit requires a project and presentation. Cooperative: open to WSU degree-seeking students. \(Fall, alt/even years\)](#)

Prereq: BIOL 310 and STAT 251 or STAT 301; or Permission

3. Make the following changes to the **B.A. and B.S. in Biology:**

Biology (B.A. or B.S.)

To graduate in this program, students must earn a minimum grade of "C" in BIOL 114, BIOL 115, and BIOL 115L. Required course work includes the university requirements (see regulation J-3) and:

BIOL 114	Organisms and Environments	4
BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
BIOL 213	Principles of Biological Structure and Function	4
BIOL 300	Survey of Biochemistry	3-4
or BIOL 380	Biochemistry I	
BIOL 310	Genetics	3
BIOL 312	Molecular and Cellular Biology	3
BIOL 313	Molecular and Cellular Laboratory	1
BIOL 314	Ecology and Population Biology	4
BIOL 315	Genetics Lab	1
BIOL 400	Seminar	1-16
BIOL 421	Advanced Evolution/Population Dynamics	3
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1
CHEM 112	General Chemistry II	3
CHEM 112L	General Chemistry II Laboratory	2
CHEM 277	Organic Chemistry I	3
CHEM 278	Organic Chemistry I: Lab	1
MATH 170	Calculus I	4
STAT 251	Statistical Methods	3
or STAT 301	Probability and Statistics	
Select one of the following Senior Experience courses		2
BIOL 401	Undergraduate Research (Max 8 credits)	
BIOL 405	Practicum in Anatomy Laboratory Teaching (Max 8 credits)	

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BIOL 407	Practicum in Biology Laboratory Teaching (Max 12 credits)	
BIOL 408	Practicum in Human Physiology Laboratory Teaching (Max 8 credits)	
BIOL 411	Senior Capstone	
Select one of the following:		3
ENGL 207	Persuasive Writing	
ENGL 208	Personal & Exploratory Writing	
ENGL 317	Technical Writing	
ENGL 318	Science Writing	
Select one of the following:		4
PHYS 111 & 111L	General Physics I and General Physics I Lab	
PHYS 211 & 211L	Engineering Physics I and Laboratory Physics I	
Select one of the following:		4
PHYS 112 & 112L	General Physics II and General Physics II Lab	
PHYS 212 & 212L	Engineering Physics II and Laboratory Physics II	
Select 14 credits of approved electives from the following:		14
BIOL 324	Comparative Vertebrate Anatomy	
BIOL 416	Plant Diversity and Evolution	
BIOL 423	Comparative Vertebrate Physiology	
BIOL 425	Special Topics: Experimental Field Ecology	
BIOL 428	Microscopic Anatomy	
BIOL 432	Immunology	
BIOL 433	Pathogenic Microbiology	
BIOL 444	Genomics	
BIOL 447	Virology	
BIOL 456	Computer Skills for Biologists	
BIOL 460	Advanced Field Botany	
BIOL 461	Neurobiology	
BIOL 474	Principles of Developmental Biology	
BIOL 478	Animal Behavior	
BIOL 482	Protein Structure and Function	
BIOL 483	Mammalogy	
BIOL 484	Invertebrate Zoology	

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BIOL 485	Prokaryotic Molecular Biology
BIOL 487	Eukaryotic Molecular Genetics
BIOL 489	Herpetology
CHEM 473	Intermediate Organic Chemistry
ENT 411	Veterinary and Medical Entomology
ENT 438	Pesticides in the Environment
ENT 441	Insect Ecology
ENT 469	Introduction to Forest Insects
ENT 476	Medical Parasitology
ENT 480	Arthropod
FISH 481	Ichthyology
MATH 437	Mathematical Biology
PLSC 415	Plant Pathology
PLSC 440	Advanced Laboratory Techniques
PLSC 476	Cell Biology
PLSC 488	Genetic Engineering
WLF 440	Conservation Biology
WLF 448	Fish and Wildlife Population Ecology
WLF 482	Ornithology

Total Hours

78-94

Biology B.A. Students must also complete:

Two humanities courses in addition to the minimum university-wide general education requirements ¹	6
One Social Science course in addition to the minimum university-wide general education requirements ¹	3
0-16 credits in a foreign language ²	0-16
Total Hours	9-25

¹ Courses satisfying the humanities requirement are those dealing with the arts, literature, and philosophy. Courses satisfying the social science requirement are those courses dealing with a person's social condition including social relations, institutions, history, and participation in an organized community. Refer to online degree audit system through Web registration system or your academic advisor for a listing of appropriate courses.

² Foreign Languages 0-16 credits (zero-four courses) competence in one foreign language equivalent to that gained by the completion of four semesters of college courses through the

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intermediate level. This requirement may be satisfied by the completion of either of the following options

1. 16 credits or four high-school units in one foreign language, or
2. 12 credits in one foreign language, and one three-credit course in literature translated from the same language. The 12 credits may be satisfied by three high-school units in one foreign language.

Courses to total 120 credits for this degree

4. Make the following changes to the **B.S. in Medical Sciences**:

Medical Sciences (B.S.)

To graduate in this program, students must earn a minimum grade of "C" in BIOL 115 and BIOL 115L. Required course work includes the university requirements (see regulation J-3) and:

BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
BIOL 120	Human Anatomy	4
BIOL 121	Human Physiology	4
BIOL 204	Special Topics	1-16
BIOL 250	General Microbiology	3
BIOL 255	General Microbiology Lab	2
BIOL 310	Genetics	3
BIOL 312	Molecular and Cellular Biology	3
BIOL 313	Molecular and Cellular Laboratory	1
BIOL 315	Genetics Lab	1
BIOL 380	Biochemistry I	4
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1
CHEM 112	General Chemistry II	3
CHEM 112L	General Chemistry II Laboratory	2
CHEM 277	Organic Chemistry I	3
CHEM 278	Organic Chemistry I: Lab	1
MATH 170	Calculus I	4
PHIL 103	Introduction to Ethics	3
PSYC 101	Introduction to Psychology	3

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SOC 101	Introduction to Sociology	3
STAT 251	Statistical Methods	3
or STAT 301	Probability and Statistics	
Select one of the following Physics sequences:		8
PHYS 111 & 111L	General Physics I and General Physics I Lab	
PHYS 112 & 112L	General Physics II and General Physics II Lab	
OR		
PHYS 211 & 211L	Engineering Physics I and Laboratory Physics I	
PHYS 212 & 212L	Engineering Physics II and Laboratory Physics II	
Select 3 credits of Written Communication courses from the following:		3
ENGL 208	Personal & Exploratory Writing	
ENGL 317	Technical Writing	
ENGL 318	Science Writing	
Select one of the following Senior Capstone courses:		2
BIOL 401	Undergraduate Research (Max 8 credits)	
BIOL 405	Practicum in Anatomy Laboratory Teaching (Max 8 credits)	
BIOL 407	Practicum in Biology Laboratory Teaching	
BIOL 408	Practicum in Human Physiology Laboratory Teaching Human Anatomy & Physiology Laboratory Pedagogy (Max 8 credits)	
BIOL 411	Senior Capstone	
Select one of the following:		3
ANTH/SOC 417	Social Data Analysis	
BIOL 456	Computer Skills for Biologists	
CHEM 302	Principles of Physical Chemistry	
MATH 437	Mathematical Biology	
STAT 431	Statistical Analysis	
Select 3 credits of Critical Thinking courses from the following:		3
ENGL 207	Persuasive Writing	
HIST 382	History of Biology: Conflicts and Controversies	
PHIL 201	Critical Thinking	
PHIL 202	Introduction to Symbolic Logic	
PHIL 417	Philosophy of Biology	

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Select 2-3 credits of Leadership and Professional courses from the following:	2-3
BIOL 398	Internship
MHR 311	Introduction to Management
INTR 492	College of Science Ambassadors (Max 8 credits)
INTR 496	Pre-Health Peer Mentors (Max 4 credits)
PHIL 361	Professional Ethics (Max 6 credits)
PSYC 414	Traumatic Events: Preparation, Intervention, Evaluation
Select 6 credits of Psychology courses from the following:	6
PSYC 305	Developmental Psychology
PSYC 311	Abnormal Psychology
PSYC 325	Cognitive Psychology
PSYC 372	Physiological Psychology
PSYC 470	Introduction to Chemical Addictions
PSYC 472	Introduction to the Pharmacology of Psychoactive Drugs
Select 6 credits of Global and Cultural Competence courses from the following:	6
ANTH 327	Belief Systems
ANTH 427	Racial and Ethnic Relations
COMM 335	Intercultural Communication
FCS 411	Global Nutrition
HIST 380	Disease and Culture: History of Western Medicine
JAMM 340	Cultural Diversity and the Media
PHIL 367	Global Justice
POLS 385	Political Psychology
SOC 201	Introduction to Inequalities & Inclusion
SOC 340	Social Change & Globalization
Select 9 credits of Biomedical Sciences courses from the following:	9
BE 425	Introduction to Biomedical Engineering
BIOL 314	Ecology and Population Biology
BIOL 324	Comparative Vertebrate Anatomy
BIOL 421	Advanced Evolution/Population Dynamics
BIOL 428	Microscopic Anatomy
BIOL 432	Immunology
BIOL 433	Pathogenic Microbiology
BIOL 444	Genomics
BIOL 447	Virology
BIOL 454	Biochemistry II

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BIOL 461	Neurobiology
BIOL 474	Developmental Biology
BIOL 482	Protein Structure and Function
BIOL 487	Eukaryotic Molecular Genetics
CHEM 372	Organic Chemistry II
ENT 411	Veterinary and Medical Entomology
ENT 476	Medical Parasitology
FCS 361	Advanced Nutrition
H&S 450	Critical Health Issues
H&S 451	Psychosocial Determinants of Health

Total Hours **101-
117**

Courses to total 120 credits for this degree

5. Make the following changes to the **B.S.Biochem. in Biochemistry**:

Biochemistry (B.S.Biochem.)

To graduate in this program, students must earn a minimum grade of "C" in BIOL 114 , BIOL 115, and BIOL 115L. Required course work includes the university requirements (see regulation J-3) and:

BIOL 114	Organisms and Environments	4
BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
BIOL 310	Genetics	3
BIOL 315	Genetics Lab	1
BIOL 312	Molecular and Cellular Biology	3
BIOL 313	Molecular and Cellular Laboratory	1
BIOL 380	Biochemistry I	4
BIOL 382	Biochemistry I Laboratory	2
BIOL 400	Seminar	1-16
BIOL 454	Biochemistry II	3
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1
CHEM 112	General Chemistry II	3
CHEM 112L	General Chemistry II Laboratory	2

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CHEM 253	Quantitative Analysis	3
CHEM 254	Quantitative Analysis: Lab	2
CHEM 277	Organic Chemistry I	3
CHEM 278	Organic Chemistry I: Lab	1
CHEM 372	Organic Chemistry II	3
MATH 170	Calculus I	4
MATH 175	Calculus II	4
PHYS 211	Engineering Physics I	3
PHYS 211L	Laboratory Physics I	1
PHYS 212	Engineering Physics II	3
PHYS 212L	Laboratory Physics II	1
STAT 251	Statistical Methods	3
or STAT 301	Probability and Statistics	
Select one of the following Senior Experience courses		2
BIOL 401	Undergraduate Research	
BIOL 405	Practicum in Anatomy Laboratory Teaching	
BIOL 407	Practicum in Biology Laboratory Teaching	
BIOL 408	Practicum in Human Physiology Laboratory Teaching Human Anatomy & Physiology Laboratory Pedagogy	
BIOL 411	Senior Capstone	
Select electives from the following: ¹		6
BE 433	Bioremediation	
BIOL 426	Systems Biology	
BIOL 432	Immunology	
BIOL 444	Genomics	
BIOL 461	Neurobiology	
BIOL 482	Protein Structure and Function	
BIOL 485	Prokaryotic Molecular Biology	
BIOL 487	Eukaryotic Molecular Genetics	
CHEM 374	Organic Chemistry II: Lab	
CHEM 472	Medicinal Chemistry	
CHEM 473	Intermediate Organic Chemistry	
FS 520	Instrumental Analysis	
PLSC 486	Plant Biochemistry	
PLSC 488	Genetic Engineering	
Select one of the following:		3

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ENGL 207	Persuasive Writing	
ENGL 208	Personal & Exploratory Writing	
ENGL 317	Technical Writing	
ENGL 318	Science Writing	
Select one of the following:		3
CHEM 302	Principles of Physical Chemistry	
CHEM 305	Physical Chemistry	
CHEM 306	Physical Chemistry II	
Total Hours		80-95

Courses to total 120 credits for this degree

¹ Additional classes can be substituted with prior approval from adviser and chairperson.

6. Make the following changes to the **B.S.M.B.B. in Molecular Biology and Biotechnology**:

Molecular Biology and Biotechnology (B.S.M.B.B.)

To graduate in this program, students must earn a minimum grade of "C" in BIOL 114, BIOL 115, and BIOL 115L. Required course work includes the university requirements (see regulation J-3) and:

BIOL 114	Organisms and Environments	4
BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
BIOL 250	General Microbiology	3
BIOL 255	General Microbiology Lab	2
BIOL 310	Genetics	3
BIOL 315	Genetics Lab	1
BIOL 312	Molecular and Cellular Biology	3
BIOL 313	Molecular and Cellular Laboratory	1
BIOL 380	Biochemistry I	4
BIOL 382	Biochemistry I Laboratory	2
BIOL 400	Seminar	1-16
BIOL 454	Biochemistry II	3
BIOL 485	Prokaryotic Molecular Biology	3
or BIOL 487	Eukaryotic Molecular Genetics	

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CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1
CHEM 112	General Chemistry II	3
CHEM 112L	General Chemistry II Laboratory	2
CHEM 277	Organic Chemistry I	3
CHEM 278	Organic Chemistry I: Lab	1
CHEM 372	Organic Chemistry II	3
MATH 170	Calculus I	4
PLSC 488	Genetic Engineering	3
STAT 251	Statistical Methods	3
or STAT 301	Probability and Statistics	
Select 8-10 credits of Approved Electives from the following:		8-10
BIOL 432	Immunology	
BIOL 433	Pathogenic Microbiology	
BIOL 444	Genomics	
BIOL 447	Virology	
BIOL 461	Neurobiology	
BIOL 474	Developmental Biology	
BIOL 482	Protein Structure and Function	
BIOL 485	Prokaryotic Molecular Biology ²	
BIOL 487	Eukaryotic Molecular Genetics	
FS 416	Food Microbiology	
FS 417	Food Microbiology Laboratory	
PHIL 361	Professional Ethics	
or PHIL 450	Ethics in Science	
PLSC 476	Cell Biology	
Select four credits from the following:		4
BIOL 301	Undergraduate Research	
BIOL 401	Undergraduate Research	
BIOL 499	Directed Study	
PLSC 440	Advanced Laboratory Techniques	
Select one of the following Senior Experience courses:		2
BIOL 401	Undergraduate Research	
BIOL 405	Practicum in Anatomy Laboratory Teaching	
BIOL 407	Practicum in Biology Laboratory Teaching	

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BIOL 408	Practicum in Human Physiology Laboratory Teaching Human Anatomy & Physiology Laboratory Pedagogy	
BIOL 411	Senior Capstone	
Select one of the following:		3
ENGL 207	Persuasive Writing	
ENGL 208	Personal & Exploratory Writing	
ENGL 317	Technical Writing	
ENGL 318	Science Writing	
Select one of the following sequences:		4
PHYS 111 & 111L	General Physics I and General Physics I Lab	
PHYS 211 & 211L	Engineering Physics I and Laboratory Physics I	
Select one of the following:		4
PHYS 112 & 112L	General Physics II and General Physics II Lab	
PHYS 212 & 212L	Engineering Physics II and Laboratory Physics II	
Total Hours		85-102

Courses to total 120 credits for this degree

- ¹ Additional classes can be substituted with prior approval from advisor and chairperson.
- ² *Either BIOL 485 or BIOL 487 may be used as an elective if not taken above as a required course.*

7. Make the following changes to the **B.S.Microbiol. in Microbiology**:

Microbiology (B.S.Microbiol.)

To graduate in this program, students must earn a minimum grade of "C" in BIOL 114, BIOL 115, and BIOL 115L. Required course work includes the university requirements (see regulation J-3) and:

BIOL 114	Organisms and Environments	4
BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1

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BIOL 250	General Microbiology	3
BIOL 255	General Microbiology Lab	2
BIOL 310	Genetics	3
BIOL 315	Genetics Lab	1
BIOL 312	Molecular and Cellular Biology	3
BIOL 313	Molecular and Cellular Laboratory	1
BIOL 380	Biochemistry I	4
BIOL 400	Seminar	1-16
BIOL 401	Undergraduate Research	1-4
or BIOL 301	Undergraduate Research	
or PLSC 440	Advanced Laboratory Techniques	
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1
CHEM 112	General Chemistry II	3
CHEM 112L	General Chemistry II Laboratory	2
CHEM 277	Organic Chemistry I	3
CHEM 278	Organic Chemistry I: Lab	1
CHEM 372	Organic Chemistry II	3
MATH 170	Calculus I	4
STAT 251	Statistical Methods	3
or STAT 301	Probability and Statistics	
Select one of the following Senior Experience courses:		2
BIOL 401	Undergraduate Research	
BIOL 405	Practicum in Anatomy Laboratory Teaching	
BIOL 407	Practicum in Biology Laboratory Teaching	
BIOL 408	Practicum in Human Physiology Laboratory Teaching Human Anatomy & Physiology Laboratory Pedagogy	
BIOL 411	Senior Capstone	
Select one of the following:		3
ENGL 207	Persuasive Writing	
ENGL 208	Personal & Exploratory Writing	
ENGL 317	Technical Writing	
ENGL 318	Science Writing	
Select one of the following:		4
PHYS 111	General Physics I	
& 111L	and General Physics I Lab	

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PHYS 211 & 211L	Engineering Physics I and Laboratory Physics I	
Select one of the following:		4
PHYS 112 & 112L	General Physics II and General Physics II Lab	
PHYS 212 & 212L	Engineering Physics II and Laboratory Physics II	
Select 15 credits of Approved Electives from the following: ¹		15
BIOL 432	Immunology	
BIOL 433	Pathogenic Microbiology	
BIOL 447	Virology	
BIOL 444	Genomics	
BIOL 482	Protein Structure and Function	
BIOL 485	Prokaryotic Molecular Biology	
BIOL 487	Eukaryotic Molecular Genetics	
ENT 411	Veterinary and Medical Entomology	
ENT 476	Medical Parasitology	
FS 416	Food Microbiology	
FS 417	Food Microbiology Laboratory	
MATH 437	Mathematical Biology	
PHIL 361	Professional Ethics	
or PHIL 450	Ethics in Science	
PLSC 476	Cell Biology	
PLSC 488	Genetic Engineering	
SOIL 425	Microbial Ecology	
Total Hours		78-96

Courses to total 120 credits for this degree

¹ Additional classes can be substituted with prior approval from advisor and chairperson.

DEPARTMENT OF GEOGRAPHY

1. Add the following courses:

GEOG 317 Tree Rings and Environmental Change
3 credits

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Joint-listed with GEOG 517

Principles, techniques, and interpretation in tree-ring science. Applications in climate, ecology, forestry, and earth sciences. The course objectives are [1] to become proficient with the field and laboratory skills commonly used in tree-ring research, [2] to develop an understanding of the diversity of the applications of tree-ring science, and [3] to apply the techniques and knowledge learned in the course in addressing a specific topic of interest within the broad realm of geographic research. Additional work required to receive graduate credit.

GEOG 414 Socioeconomic Applications of GIS

3 credits

This course explores the use of geographic information systems (GIS) in various socioeconomic research fields including but not limited to urban planning, transportation, public health, environmental justice, crime analysis, and retail/business location etc. A major goal of this course is to teach students how to integrate geographical information techniques and data analytics with their future or ongoing research and real-world applications in the fields of social sciences. The course will be a combination of lectures and labs. The basic concepts, methodologies, and theories will be introduced in the lecture, and the lab sections are designed to give students hands-on experience using ArcGIS to complete a series of real-world projects.

Prereq: GEOG 385 or equivalent

GEOG 487 (s) Topics in Geospatial Analysis

3 credits, max arranged

Joint-listed with GEOG 587

Current topics and applications in remote sensing, GIS, and/or spatial analysis. Topics to vary by instructor and current trends in the field. Recommended preparation: At least 2 courses in GIS and/or 1 in remote sensing, depending on topic. Additional course project required for graduate credit.

GEOG 517 Tree Rings and Environmental Change

3 credits

Joint-listed with GEOG 317

Principles, techniques, and interpretation in tree-ring science. Applications in climate, ecology, forestry, and earth sciences. The course objectives are [1] to become proficient with the field and laboratory skills commonly used in tree-ring research, [2] to develop an understanding of the diversity of the applications of tree-ring science, and [3] to apply the techniques and knowledge learned in the course in addressing a specific topic of interest within the broad realm of geographic research. Additional work required to receive graduate credit.

2. Change the following courses:

GEOG 407 Spatial ~~Statistics~~-Analysis and Modeling

3 credits

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Joint-listed with GEOG 507.

Introduces the basic theories and methods of spatial analysis used for statistical modeling and problem solving in human and physical geography. The special nature of spatial data (point, continuous, and lattice) in the social and physical sciences is emphasized. Topics include point pattern analysis, spatial autocorrelation analysis, spatial multivariate regression, local indicators of spatial association, and geographically weighted regression. Extra oral and/or written assignments required for grad credit. Cooperative: open to WSU degree-seeking students.

Prereq: STAT 431 or Permission

GEOG 507 Spatial ~~Statistics~~-Analysis and Modeling

3 credits

Joint-listed with GEOG 407.

Introduces the basic theories and methods of spatial analysis used for statistical modeling and problem solving in human and physical geography. The special nature of spatial data (point, continuous, and lattice) in the social and physical sciences is emphasized. Topics include point pattern analysis, spatial autocorrelation analysis, spatial multivariate regression, local indicators of spatial association, and geographically weighted regression. Extra oral and/or written assignments required for grad credit. Cooperative: open to WSU degree-seeking students.

Prereq: STAT 431 or Permission

3. Reactivate and change the following course:

GEOG 587 (s) ~~Advanced~~ Topics in ~~Remote Sensing~~ Geospatial Analysis

3 credits, max arranged

Joint-listed with GEOG 487

Current topics and applications in remote sensing, GIS, and/or spatial analysis. Topics to vary by instructor and current trends in the field. ~~literature including radar, thermal and hyperspectral remote sensing, sensor advances, airborne platforms, advanced classification and segregation techniques, large area pattern analysis, time series and trends, and advances in both terrestrial and non-terrestrial approaches, models and applications.~~ Recommended preparation: At least 2 courses in GIS and/or 1 in remote sensing, depending on topic. Additional course project required for graduate credit.

4. Make the following changes to the **B.S. in Geography**:

Geography (B.S.)

This program is offered through the College of Science. Required course work includes the university requirements (see regulation J-3) and:

Note: Students must earn a grade of "C" or better in all Geography courses.

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ENGL 313	Business Writing	3
or ENGL 317	Technical Writing	
GEOG 100	Physical Geography	3
GEOG 100L	Physical Geography Lab	1
GEOG 165	Human Geography	3
GEOG 200	World Regional Geography	3
GEOG 313	Global Climate Change	3
GEOG 385	GIS Primer	3
GEOG 390	Cartographic Design & Geovisualization	3
GEOG 489	Capstone Preparation	1
GEOG 493	Senior Capstone in Geography	3
STAT 251	Statistical Methods	3
Select one of the following:		3-4
MATH 143	College Algebra	
MATH 160	Survey of Calculus	
MATH 170	Calculus I	
MATH 175	Calculus II	
Select 3 credits from the following in human geography:		3
GEOG 260	Geopolitics	
GEOG 330	Urban Geography	
GEOG 340	Business Location Decisions	
GEOG 345	Global Economic Geography	
GEOG 350	Geography of Development	
GEOG 360	Population Dynamics and Distribution	
GEOG 365	Political Geography	
Select 3 credits from the following in physical geography:		3
GEOG 301	Meteorology	
GEOG 317	Tree Rings and Environmental Change	
GEOG 401	Climatology	
GEOG 410	Biogeography	
GEOG 430	Climate Change Ecology	
Select one course from the following in human-environment interactions:		3
GEOG 411	Natural Hazards and Society	
GEOG 420	Land, Resources, and Environment	
GEOG 435	Climate Change Mitigation	

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GEOG 455 Societal Resilience and Adaptation to Climate Change

[GEOG 488](#) [Geography of Energy Systems](#)

Select 6 additional credits in Geography courses, for a total minimum number of 36 credits in Geography 6

Total Hours ~~47-48~~ [46-47](#)

Courses to total 120 credits for this degree

Students interested in obtaining more depth in any of the departmental focus areas (Geographic Information Science (GIS), spatial analysis, physical science and the environment, regional/global development) are encouraged to discuss with their advisor recommended courses in Geography and other departments appropriate to those depth areas.

5. Make the following changes to the **Climate Change Undergraduate Academic Certificate**:

Climate Change Undergraduate Academic Certificate

GEOG 313/513 Global Climate Change 3

Select three courses from the following: 9

GEOG 401 Climatology

~~GEOG 411 Natural Hazards and Society~~

GEOG 430 Climate Change Ecology

GEOG 435 Climate Change Mitigation

GEOG 455 Societal Resilience and Adaptation to Climate Change

[GEOG 317/517](#) [Tree Rings and Environmental Change](#)

[GEOG 488](#) [Geography of Energy Systems](#)

[GEOL 435/535](#) [Glaciology and the Dynamic Frozen Earth](#)

[SOC 466](#) [Climate Change and Society](#)

~~Seminar courses as approved by the department~~

Total Hours 12

Courses to total 12 credits for this certificate

Optional recommendation for selection of electives:

In selecting 3 electives from the above list, it is not required that students choose a particular track, and none is designated on the student's transcript. However, to assist students in course selection, the department has developed some recommendations for specific electives students may want to pursue, if they have specific interests or career objectives.

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For Breadth in all aspects of Climate Change (both Human and Natural Systems) – recommended electives:

Several of the above courses are focused primarily on some aspect of climate change, and the department recommends that students consider these courses when selecting electives to obtain knowledge across the range of topics of climate change, including climate science, impacts, adaptation, and mitigation:

- [Geog 401 Climatology](#)
- [Geog 430 Climate Change Ecology](#)
- [Geog 435/535 Climate Change Mitigation](#)
- [Geog 455 Societal Resilience and Adaptation to Climate Change](#)
- [Soc 466 Climate Change and Society](#)

For Emphasis on Climate Change and Energy/Society – recommended electives:

- [Geog 488 Geography of Energy Systems](#)
- [Geog 435/535 Climate Change Mitigation](#)
- [Geog 455 Societal Resilience and Adaptation to Climate Change](#)
- [Soc 466 Climate Change and Society](#)

For Emphasis on Climate Change and Biophysical Impacts – recommended electives:

- [Geog 401 Climatology](#)
- [Geog 430 Climate Change Ecology or Geog 410 Biogeography](#)
- [Geog 317/517 Tree Rings and Environmental Change](#)
- [Geol 435/535 Glaciology](#)

6. Make the following changes to the **Geographic Information Systems Undergraduate Academic Certificate**:

Geographic Information Systems Undergraduate Academic Certificate

GEOG 385	GIS Primer	3
GEOG 475	Intermediate GIS	3
Select 9 credits of electives from the following: (See note below about limits to the total number of credits allowed from outside the Department of Geography.)		9
GEOG 390	Cartographic Design & Geovisualization	
GEOG 402	GIS Skills Development	
GEOG 407/507	Spatial Statistics Analysis and Modeling	
GEOG 414	Socioeconomic Apps in GIS	
GEOG 424/524	Hydrologic Applications of GIS and Remote Sensing	
GEOG 483/583	Remote Sensing/GIS Integration	
GEOG 479	GIS Programming	
GEOG 487/587	Topics in Geospatial Analysis	

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[FOR/NRS 375](#)

[Intro to Spatial Analysis for Natural Resources](#)

[LARC 395](#)

[GIS Applications in Land Planning 1](#)

[REM 407](#)

[GIS Applications in Fire Ecology and Management](#)

[Other courses as approved by the department](#)

Note: A grade of 'C' or higher is required in all coursework for this academic certificate. [Nine of the 15 credits must be taken within the Department of Geography at the University of Idaho. Only 6 credits may be taken outside of the department, including courses taken in other departments at UI and transfer courses from other institutions used as substitutions.](#)

Courses to total 15 credits for this certificate

DEPARTMENT OF GEOLOGICAL SCIENCES

1. Reactivate and change the following courses:

GEOL 360 Geologic Hazards

3 credits

Survey of natural geologic hazards, their controlling factors, recognition of hazard potential; emphasis on flash floods, earthquakes, landslides, volcanic [eruptions, and tsunamis](#). ~~hazards, subsidence. Three 1-day field trips.~~

Prereq: GEOL 101 or GEOL 111 [or GEOG 100 or ENVS 101 or Permission](#)

GEOL 448 Tectonics

3 credits

Joint-listed with GEOL 548

~~Fundamentals of global plate tectonics, evolution of ocean basins, and the development of continental orogenic belts; focus on theoretical aspects of global tectonics, the salient physical constraints leading to the paradigm, and practical application of the model to regional geological problems. Graduate credit requires additional work including independent research, presentation of the research results in a class presentation, writing a research paper, and answering an additional question in examinations. Two lec and 2 hrs of lab a wk; one or two 1- to 2-day field trips.~~

[An investigation of the processes driving the physical evolution of the Earth's crust and mantle and how those processes are reflected at the surface. Discussion of the development of mountain belts, growth of continents and ocean basins, and plate boundary dynamics. A more advanced project/paper will be required for graduate-level credit. One or two 1-2 day field trips. Cooperative: open to WSU degree-seeking students.](#)

Prereq: GEOL 345 or Permission

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GEOL 471 Ore Deposits and Exploration

3 credits

The geologic origin of metallic ore deposits, and the methods used to search for them. Taught in alternating years. ~~3-hr lec per week~~. One one-day and one three-day field trips.

Prereq: GEOL 249 and MATH 143 with a grade of 'C' or better

GEOL 548 Tectonics

3 credits

Joint-listed with GEOL 448

~~Fundamentals of global plate tectonics, evolution of ocean basins, and the development of continental orogenic belts; focus on theoretical aspects of global tectonics, the salient physical constraints leading to the paradigm, and practical application of the model to regional geological problems. Graduate credit requires additional work including independent research, presentation of the research results in a class presentation, writing a research paper, and answering an additional question in examinations. Two lec and 2 hrs of lab a wk; one or two 1-2 day field trips.~~

An investigation of the processes driving the physical evolution of the Earth's crust and mantle and how those processes are reflected at the surface. Discussion of the development of mountain belts, growth of continents and ocean basins, and plate boundary dynamics. A more advanced project/paper will be required for graduate-level credit. 3 hrs lec/wk, One or two 1-2 day field trips. Cooperative: open to WSU degree-seeking students.

Prereq: Geol 345 or Permission

2. Change the following courses:

GEOL 212 Principles of Paleontology

4 credits

Studies of morphology, classification of fossil groups, and utility of fossils in interpreting depositional environments and ages of sedimentary rocks. ~~Three lec and one 2-hr lab a wk; o~~ One 12- to 24-day field trip. Recommended Preparation: GEOL 102

GEOL 344 Earthquakes ~~and Seismic Hazards~~

3 credits

The geology of earthquakes including the cause of fault rupture, seismic waves, focal mechanisms, and earthquakes associated with all fault types in a variety of tectonic settings; methods of identifying paleo-earthquakes in the geologic record, and the assessment of seismic ~~hazard and~~ risk in active fault environments. ~~One 3-day field trip.~~

Prereq: GEOL 101/GEOL 101L or GEOL 111/GEOL 111L or GEOG 100 or ENVS 101; and MATH 143 with a grade of 'C' or better

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GEOL 361 Geology and the Environment

3 credits

Environmental consequences of development of geologic resources; including issues of waste disposal, pollution and human health, [and climate change](#); ~~natural hazards and their impact on humans and the environment. Two 1-day field trips.~~

Prereq: GEOL 101/GEOL 101L or GEOL 111/GEOL 111L [or GEOG 100 or ENVS 101](#); and MATH 143 with a grade of 'C' or better

DEPARTMENT OF MATHEMATICS

1. Add the following course:

MATH 153 Introduction to Statistical Reasoning

3 credits

Cross-listed with STAT 153

A course in statistical literacy, an introduction with emphasis on examples and case studies. Topics include data sources and the distinction between experiments, observational studies, and surveys, graphical and numerical description of data, understanding randomness, central tendency, correlation versus causation, line of best fit, estimation of proportions, and statistical testing.

2. Change the following course:

MATH 510 Seminar on College Teaching of Mathematics

1 credit, [max arranged](#)

Development of skills in the teaching of college mathematics; includes structure of class time, test construction, and various methods of teaching mathematics; supervision of teaching assistants in their beginning teaching assignments. Graded P/F.

Prereq: Permission

DEPARTMENT OF PHYSICS

1. Change the following course:

PHYS 490 Research

~~10~~-6 credits, max 6

Undergraduate research or thesis.

Prereq: Permission of Instructor

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DEPARTMENT OF STATISTICAL SCIENCE

1. Add the following course:

STAT 153 Introduction to Statistical Reasoning

3 credits

Cross-listed with MATH 153

A course in statistical literacy, an introduction with emphasis on examples and case studies. Topics include data sources and the distinction between experiments, observational studies, and surveys, graphical and numerical description of data, understanding randomness, central tendency, correlation versus causation, line of best fit, estimation of proportions, and statistical testing.

2. Make the following changes to the **B.S. in Statistics**:

Statistics (B.S.)

Required course work includes the university requirements (see regulation J-3) and:

MATH 170	Calculus I	4
MATH 175	Calculus II	4
MATH 275	Calculus III	3
MATH 330	Linear Algebra	3
Select one of the following options:		39-58
General		
Actuarial Science and Finance		
Total Hours		53-72

A. General Option

STAT 301	Probability and Statistics	3
STAT 407	Experimental Design	3
STAT 422	Sample Survey Methods	3
STAT 431	Statistical Analysis	3
STAT 436	Applied Regression Modeling	3
STAT 451	Probability Theory	3
STAT 452	Mathematical Statistics	3
Select two of the following:		6
CS 120	Computer Science I	
STAT 426	SAS Programming	
STAT 427	R Programming	

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Other approved courses		
Select 12 credits from the following:		12
CS 479	Data Science	
MATH 310	Ordinary Differential Equations	
MATH 428	Numerical Methods	
MATH 437	Mathematical Biology	
MATH 438	Mathematical Modeling	
MATH 471	Introduction to Analysis I	
MIS 455	Data Management for Big Data	
STAT 456	Quality Management	
STAT 514	Nonparametric Statistics	
STAT 517	Statistical Learning and Predictive Modeling	
STAT 535	Introduction to Bayesian Statistics	
Total Hours		39
Courses to total 120 Credits for this degree		

B. Actuarial Science and Finance Option

Math Courses		
MATH 310	Ordinary Differential Equations	3
MATH 451	Probability Theory	3
MATH 452	Mathematical Statistics	3
400-Level Math Courses:		9
Three additional courses chosen from Math courses numbered 400 and above. May include Stat 422.		
Supporting Courses		12
ACCT 201	Introduction to Financial Accounting	
ACCT 202	Introduction to Managerial Accounting	
FIN 301	Financial Resources Management	
STAT 431	Statistical Analysis	
BUS 339	Spreadsheet Modeling	1-3
or STAT 426	SAS Programming	
CS 112	Computational Thinking and Problem Solving	3-4
or CS 120	Computer Science I	
STAT 251	Statistical Methods	3
or STAT 301	Probability and Statistics	
STAT 433	Econometrics	3

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or ~~STAT 550~~

[Or STAT 436](#)

~~Regression~~

[Applied Regression Modeling](#)

Select one of the following:

4-6

ECON 201
& ECON 202

Principles of Macroeconomics
and Principles of Microeconomics

ECON 272

Foundations of Economic Analysis

Select three courses selected from the following:

7-9

ECON 351

Intermediate Macroeconomic Analysis

ECON 352

Intermediate Microeconomic Analysis

FIN 302

Intermediate Financial Management

FIN 381

International Finance

FIN 408

Security Analysis

FIN 463

Portfolio Management

FIN 464

Derivatives and Risk Management

FIN 465

Introduction to Market Trading

FIN 469

Risk and Insurance

MATH 455

Applied Actuarial Science

[STAT 419, 426 or 427](#)

[Introduction to SAS/R Programming, SAS
Programming, or R Programming](#)

Total Hours

51-58

Courses to total 120 credits for this degree

3. Make the following changes to the **Minor in Statistics**:

Statistics Minor

STAT 422

Sample Survey Methods

3

STAT 431

Statistical Analysis

3

MATH 160

Survey of Calculus

4

or MATH 170

Calculus I

STAT 251

Statistical Methods

3

or STAT 301

Probability and Statistics

Select three courses from the following:

9

MKTG 421

Marketing Research & Analysis

MATH 330

Linear Algebra

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MATH 451	Probability Theory
MATH 452	Mathematical Statistics
<u>STAT 419, 426, or 427</u>	<u>Introduction to SAS/R Programming, SAS Programming, or R Programming</u>
STAT 433	Econometrics
STAT 456	Quality Management
STAT 514	Nonparametric Statistics
STAT 519	Multivariate Analysis

Total Hours

22

Courses to total 22 credits for this minor

OFFICE OF THE REGISTRAR

1. Move the following courses to **Dormant** status:

AGEC	105	Survey of Agribusiness
AGEC	418	Dvlpng Negotatn Skills/Agribus
AGEC	419	Dvlpmt/Anlys/Enterprise Bdgts
AGEC	586	Regional Econ Dvlpmt Thry
AGED	140	Intro Organztnl/Prsnl Ldr Dev
AGED	158	Intro to Sprvsd Ag Exp Progms
AGED	159	Intro to the FFA Organization
AGED	160	Srvy/Expctns/Rspns/Tch HS Agri
AIST	401	Contemp Amer Indian Issues
AIST	421	Native Amer Nat Res Law
ANTH	453	Archaeological Lab Techniques
ARCH	217	Ancient & Pre-Modern Art
ARCH	244	Comp Aided Drafting & Modeling
ARCH	416	Urban Social Sustainability
ARCH	516	Urban Social Sustainability
ARCH	532	Advanced Analog Graphics
ART	390	Mixed Media
ART	491	Information Design
ART	520	Studio Workshops
ART	570	Internet Portfolio Development
ASM	105	Survey of Ag Mechanics
AVS	105	Srvy/Sci of Lvstk Prod & Mgmt
AVS	509	Growth Physiology Inquisition
BCB	510	CompSci Bridge

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BCB	511	Applied Bioinformatics
BCB	512	Multidisc Skills
BIOL	416	Plant Diversity and Evolution
BIOL	491	Practicum in Teaching
BIOL	548	Evolutionary Ecology
BUS	339	Spreadsheet Modeling
BUS	551	Managing Scientific Projects
CHEM	553	Separatn Thry/Chromatography
CORS	215	Integ Sc:Color/Chem & Art
CORS	219	Integ Sci:Human Nature
CORS	229	Integ Sci:Nature of Islands
CTE	310	Lab Safety, Mgnt, & Liability
CTE	354	Construction Technology
CTE	417	Teaching & Lrng/STEM Intgrtn
ECON	340	Managerial Economics
ECON	385	Environmental Economics
EDCI	526	Adv Educational Psych
EMBA	510	Summer Integrative Experience
ENGL	433	Chaucer
ENGL	448	Psycholinguistics
FCS	302	Prof Skills in Dietetics II
FCS	351	Administrtrn/FCCLA Organizatns
FCS	461	Methods/Strategies FCS Educ
FOR	531	Invasion Biology
GEOG	340	Business Location Decisions
GEOG	440	Geoeconomics
GEOG	540	Business Location Decisions
GEOG	542	Spatial Statistics
GEOL	497	Practicum In Tutoring
GEOL	520	Adv Topics in Sedimentary Rock
GEOL	542	Advanced Structural Geology
H&S	390	Athl Trng Hi-Schl/Clincl Exper
H&S	391	Athl Trng Sports Med/Clin Exp
H&S	392	Athl Trn/Gen Med/Ortho Cln Exp
H&S	455	Design & Analysis in MvSc
H&S	495	Practicum
HIST	329	Idaho and the Pacific NW
HIST	378	Hist Science Antiquity to 1700
HIST	382	Hist Biology:Cnflcts/Controver
HIST	388	History of Mathematics
HIST	395	Themes and Issues in History
HIST	431	Stolen Continents/Indian Story
HIST	520	Hist Women Amer Soc

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HIST	557	Hist Of Middle East
HIST	560	Conspiracies & Sec Soc in Hist
HIST	584	Mod China, 1840's-Pres
INDT	463	Industrial Transport Safety
INDT	465	Construction Safety
JAMM	370	Digital Audio Production
JAMM	456	Nonprofit Fundraising
LAW	937	Wildlife Law and Policy
LIBS	415	Technical Services/Small Libr
MATH	137	Algebra W/Applications
MATH	435	Topics in Applied Mathematics
MATH	522	Topology II
MATH	541	Seminar in Analysis
MATH	543	Approximation Theory
MATH	578	Combinatorial Optimization
MATH	581	Sem In Combinatorics
MATH	583	Seminar In Appl Math
ME	519	Fluid Transients
ME	521	Design Synth w/ Solid Model
ME	580	Linear System Theory
MS	227	American Military History
MSE	511	Nuclear Degradation Mechanisms
MTHE	301	Early Childhood Mathematics
MTHE	514	Foundations of Calculus
MTHE	515	Problems in Geometry
MTHE	527	Transformational Geometry
MTHE	590	Seminar in Math Education
MUSA	143	Piano Class for Non-Majors
MUSA	147	Voice Class
MUSC	437	Music in Film
MUSC	537	Music in Film
MUSH	457	Choral Literature II
MUST	568	Tech in the Music Classroom
MUST	586	Advanced Instrumental Methods
MUSX	301	Technology for Musicians
NR	520	Preparing Science Manuscripts
ORGS	310	App/Exp in Org Sciences
PEP	135	Skill/Analy:Bskbl-Volleybl
PEP	136	Skill//Analy:Soccer-Speedbl
PEP	380	Asmnt & Res in Phys Ed Pdgy
PEP	440	Curric/Admin/Phys Actv Pedgy
PEP	471	Athl Trng Clincl Exper VI
PEP	472	Athl Trng Clincl Exper VII

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PLSC	100	Survey/Plant & Soil Sciences
REM	452	Western Wildland Landscapes
REM	595	Teaching Practicum
SOC	316	Explore Mentoring & Leadership
SOC	338	Regulation of Vice
SOC	450	Dynamics of Social Protest
SOC	468	Capstone: Applied Sociology
SOC	495	Practicum In Tutoring
SOIL	597	Practicum
STAT	416	Statistical Research Methods
STAT	525	Master's Econometrics
STAT	544	Stochastic Models
TM	515	Adv Topics in EM
VTD	444	Other Media

2. Move the following courses to **Inactive** status:

ACCT	486	Contemporary Mgmt Acct Issues
ACCT	570	Adv Acct Syst Anl/Cntl
AERO	392	Instrument Pilot Ground School
AGEC	330	Agricultural Cooperatives
AGEC	417	Risk Mgmt/Agriculture
AGED	181	Intro to Extension Ag
AGED	447	Adult Education in Agriculture
AGED	547	Adult Education in Agriculture
AGLS	210	Living on the Land
AGLS	212	Junior Mst Grdnr Tchr Prep
ANTH	462	Human Issues/Internt'l Develop
ANTH	562	Human Issues/Internt'l Develop
AOLL	509	Foundations of Adult Basic Edu
ARBC	101	Elem Modern Standard Arabic I
ARCH	513	Arch Thry: Modernism/Postmod
ARCH	567	Wellness and Design
ARCH	597	Practicum
ASM	240	Cmptr Appls/Biol Sys
ASM	304	Agric Fluid Power Syst
AVS	409	Growth Physiology Inquisition
BE	356	Hydrologic Measuremnt Techniq
BE	432	Bioreact Thry/Dsgn-Waste Trtmt
BE	532	Bioreact Thry/Dsgn-Waste Trtmt
BE	534	Applied Bioremediation
BE	550	Natural Channel Flow

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BIOL	423	Comparatv Vertebrate Physiol
BIOL	424	Comptv Vertebrate Physio Lab
BIOL	484	Invertebrate Zoology
BIOL	558	Reproductive Biology of Fishes
CE	492	Professional Society Project
CE	523	Water Resources Systems
CE	528	Stochastic Hydrology
CHE	415	Integ Circ Fabrication
CHE	460	Biochemical Engr
CHE	470	Hazardous Waste Management
CHE	475	Air Pollution Control
CHE	480	Engr Risk Assess/Haz Waste
CHE	490	Hydrogen Energy Systems
CHE	545	Mass Transfer Oper I
CHE	546	Mass Transfer Ops II
CHE	560	Biochemical Engr
CHE	570	Hazardous Waste Management
CHE	571	Advanced Plant Design
CHE	575	Air Pollution Control
CHE	580	Engr Risk Assess/Haz Waste
CHE	590	Hydrogen Energy Systems
CHEM	564	Inorganic Chemistry
CORS	206	Integ Sc:Hum Repr/Ethics-Law
CORS	220	Integ Sci:Nat Hzrds/Distr Prep
CORS	225	Integ Sci:Advent of Atomic Bmb
CORS	226	Integ Sci:Weapons and War
CS	127	Programming Language
CS	350	Interm Computer Architecture
CS	412	Parallel Algorithms
CS	424	Advanced Computer Graphics
CS	443	Embedded Systems
CS	513	Concurrent Systems
CS	524	Advanced Computer Graphics
CS	541	Advanced Operating Systems
CTE	104	Input Technologies/21st Cent
CTE	111	Computer Skills
CTE	306	Preserv/New CTE Tchrs
CTE	428	Computer Integrated Systems
CTE	438	Digital Electronics
CTE	449	Appropriate Tech/Alt Energy
CTE	450	Occupational Safety
CTE	461	Use Intrnt-Bsd Career Info/Clis
CTE	475	LAN Technology

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CTE	507	Future of Education & Work
CTE	521	Adv Bus/Mrktg/Retailing Method
ECON	415	Mkt Struct & Govt Pol
ECON	527	Mathematics for Economists
ED	510	Schools in Context
EDCI	542	Power Engineer Transportation
EDCI	558	Wrtg Inst:NW Wrtg Proj
EDCI	567	Math Thinking Instruct Gr K-3
EDCI	568	Math Thinking Instruct Gr 4-8
EDCI	569	Math Thinking Instruct Gr 6-12
EDSP	483	Special Education Internship I
EDSP	550	Alt/Augment Comm Strat
EDSP	578	Curric Assess Low-Incidence I
EDSP	579	Curric Assess Low-Incidence II
ENGL	90	Developmental Writing
ENGL	515	ESL Teaching Practicum
ENGL	540	Stds Restor/18th C British Lit
ENGR	102	Introduction to Engineering
ENT	551	Appl Biol Cntrl:Weeds
ENVS	483	Water and Energy Systems
ENVS	583	Water and Energy Systems
FCS	465	Intro FCS Internship
FCS	469	Indiv Assesmt/Instrctn-FCS Cls
FCS	470	Curriculum Portfolio/FCS Educ
FCS	471	Intern:Family/Consumer Sci Edu
FOR	324	Forest Regeneration
FOR	425	For and Soil Nutrient Cycling
FOR	429	Landscape Ecology
FOR	541	Stable Isotope Thry/Mthds
FOR	542	Conservation Genetics Lab
FOR	572	Spatial/Biophysical Modeling
GEOG	364	Idaho & Pacific NW
GEOG	415	Sci Data Analysis w/ Comp Prog
GEOG	435	Climate Change Mitigation
GEOG	440	Geoeconomics
GEOG	491	Field Techniques
GEOG	497	Practicum
GEOG	535	Climate Change Mitigation
GEOG	542	Spatial Statistics
GEOG	550	Geography of Development
GEOG	592	Professional Development
GEOL	541	Structural Analysis
GEOL	548	Tectonics

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GEOL	550	Advanced Mineralogy
GEOL	554	Physical Petrology
H&S	462	Gnrl Medicine/Physcl Actv Indv
H&S	464	Athltc Trng Lowr Extrem Eval
H&S	466	Athletic Trng Upper Extrm Eval
H&S	467	Athletic Trng Rehabilitation
H&S	468	Athletic Training Modalities
H&S	469	Athletic Trng Organiz/Admin
H&S	495	Practicum
HIST	331	Age Of African Empires
HIST	350	Age of Enlightenment
HIST	366	Modern European Culture
HIST	455	Modern Europe
HIST	481	America's Wars in Asia
HIST	547	The Renaissance
HIST	555	Modern Europe
HIST	581	America's Wars in Asia
HIST	597	PRACT:Teach Coll Hist
INDT	468	App Research in Human Perf
INTR	201	Major/Career Expl & Dec Making
INTR	410	Responsible Research Conduct
INTR	494	Service Practicum
INTR	522	Comm for Science Professionals
JAMM	375	Brdcst TV/Studio Progr Prodctn
JAMM	462	Creative Thnkg for Mass Media
JAMM	465	Political Advertising
LARC	559	Northrn Rocky Rgnl Lndscpe
LARC	560	Cultural Interp/Rgnl Landscape
LAS	301	Intro LA Studies
LAS	315	Comparatv African-Am Cultures
LAS	401	Rdgs:Spanish Literature
LAS	435	Lt Amer:Colonial Era
LAS	493	Int'l Land Preserv/Conserv Sys
LAS	504	Special Topics
LATN	101	Elementary Latin I
LATN	102	Elementary Latin II
LATN	449	Practicum in Tutoring
LAW	990	Consumer Law
MATH	540	Partial Differential Equations
MATH	578	Combinatorial Optimization
ME	578	Neural Network Design
ME	583	Reliability of Engr Systems
MSE	344	Low Temp Processing of MatrIs

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MSE	421	Light Metals
MSE	442	High Temp Proc of Materials
MSE	516	Magnetic Materials
MSE	517	Reaction Kinetics
MSE	521	Light Metals
MSE	525	Electronic Materials
MSE	539	Adv Mechanics of Materials
MSE	550	Nuclear Reactor Fuels
MUSA	366	Orchestral Repertoire
MUSA	526	Pep Band
MUSA	566	Orchestral Repertoire
MUSC	541	Graduate Theory Review
MUST	378	Teaching World Music/Cultures
MUST	597	Practicum
NE	530	Two Phase Flow
NE	533	Monte Carlo Methods
NE	544	Rctr Analysis/Statics/Kinetics
NE	565	Reactor Engineering
NE	582	Spent Nclr Fuel Mgmt/Dispostn
NE	585	Nuclear Fuel Cycles
NEZP	201	Intermediate Nez Perce I
NR	496	Practicum in Leadership
NRS	581	Water Policy and Politics
NRS	583	Nature-Based Tourism
NRS	587	Research Literature in CSS
ORGS	317	Explore Mentoring & Leadership
PEP	101	Intro Athletic Training
PEP	272	Athl Trng Clincl Exper II
PEP	273	Athl Trng Clincl Exper III
PEP	597	Practicum
PHIL	409	Advanced Logic
PHIL	475	Philosophy, Law, & Literature
PHIL	510	Sem in the Hist of Philosophy
PHIL	517	Philosophy of Biology
PHIL	520	Seminar/Ethical Theory
PHIL	522	Seminar in Metaphysics
PHIL	524	Seminar/Epistemology
PHYS	322	Analytical Mech
POLS	335	American Intrst Grps/Soc Mvmts
POLS	360	Law and Society
POLS	536	Policy Dibrtn/New Info Society
POLS	569	The Judicial Process
PSYC	484	Fac Skills & Grp Mgmt/Prev Prv

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PSYC	570	Intro to Chemical Addictions
PSYC	590	Psychopharmacology
RELS	442	Medieval Church
RELS	447	The Renaissance
RELS	449	Tudor-Stuart Britian 1485-1660
REM	402	GIS App in Natural Resources
REM	551	Rangeland Vegetation Ecology
REM	556	Foraging Ecology of Herbivores
SOC	209	Altern Violnce Trn-ATV
SOC	315	Community Service Lrng
SOC	514	Development of Social Theory
SOIL	416	Sustain Sml Acre Farm/Ranch
SOIL	526	Soil Mineralogy
SOIL	547	Soil Fertility Mgt
STAT	150	Intro to Statistics
STAT	428	Geostatistics
STAT	446	Six Sigma Innovation
STAT	575	Theory of Linear Models
THE	421	Advanced Theatre Management
THE	521	Advanced Theatre Management
TM	512	Fundmntl Concpt of Nuclear Sci
TM	523	Industrial Safety Applications
WLF	543	Fish & Wildl Pop Analy
WLF	544	Large Mammal Ecology
WLF	597	Practicum