General Curriculum Report #295

UNIVERSITY OF IDAHO – OFFICE OF THE REGISTRAR
FEBRUARY 13, 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 2019 unless otherwise noted with the approved item.

College of Agricultural and Life Sciences

AGRICULTURAL AND EXTENSION EDUCATION

1. Create the following prefix **(see UCC-19-018-addendum-2):**
   CLDR (Community Based Leadership Courses)

2. Add the following courses:
   AGED 481 Advanced Agricultural Communications and Leadership
   3 credits
   This course is a culmination of the comprehensive knowledge gained in agricultural communications and leadership that infuses reflection with a real-life application of learned tools and skills. Designed for students to engage with a community organization or business to complete a full organizational analysis and design a communications campaign. The course results in the development of a portfolio.
   Prereq: AGED 251, AGED 450, AGED 451

   CLDR 360 Leadership and Community Dynamics
   3 credits
   This course aims to prepare students to address complex personal, organizational, and societal issues facing communities today through an exploration of traditional and contemporary leadership models, theories, and styles. Students will examine community-based problems and the role of formal and nonformal leadership in providing viable solutions for public and private domains. Designed to help students develop leadership competencies and enhance their strengths by thinking beyond role-based skills in organizational and community development.

   CLDR 450 Leading People and Teams
   3 credits
   Cross-listed with AGED 450
   This course focuses on leadership and communication in groups and teams through an exploration of team-based leadership and shared visions. Students will develop a better understanding of themselves as leaders and followers and the role of others as leaders and followers within a community. Topics include: community-based models and theories related to effective groups and teams, processes of teams, team management, relationships in teams, creating a shared mission and vision amongst members, improving and evaluating team performance, determining leadership strategies based on team dynamics, and shared leadership. Recommended preparation: AGED 251

CLDR 480 Change and Power in a Global Society
3 credits
This course explores models, theories, and competencies relating to change and becoming global change agents. Designed to promote an awareness and understanding of local and global issues. Students will be challenged to critically analyze barriers and constraints related to change, including: social and political influence, power dynamics, financial constraints, and complexity. Students will have the opportunity to gain perspective on the role of leadership and appropriate strategies for approaching issues with attention to stakeholders, inclusion, and cultural contexts.

3. Change the following courses:
AGED 450 ~~Developing Leaders~~Leading People and Teams
3 credits
Joint-listed with AGED 550~~.~~, Cross-listed with CLDR 450
~~An action-oriented, participatory examination of aspects of "leadership." Designed to stir students' excitement about becoming leaders in school, home, and community; help students develop enthusiasm and interest in focusing on their vision for the future; individual and group activities allow students to identify their leadership philosophy, enhance their strengths, and improve on their weaknesses. Additional projects/assignments reqd for grad cr. (Alt/yrs, Spring only)~~ This course focuses on leadership and communication in groups and teams through an exploration of team-based leadership and shared visions. Students will develop a better understanding of themselves as leaders and followers and the role of others as leaders and followers within a community. Topics include: community-based models and theories related to effective groups and teams, processes of teams, team management, relationships in teams, creating a shared mission and vision amongst members, improving and evaluating team performance, determining leadership strategies based on team dynamics, and shared leadership. Recommended preparation: AGED 251

AGED 550 ~~Developing Leaders~~Leading People and Teams
3 credits
Joint-listed with AGED 450.
~~An action-oriented, participatory examination of aspects of "leadership." Designed to stir students' excitement about becoming leaders in school, home, and community; help students develop enthusiasm and interest in focusing on their vision for the future; individual and group activities allow students to identify their leadership philosophy, enhance their strengths, and improve on their weaknesses. Additional projects/assignments reqd for grad cr. (Alt/yrs, Spring only)~~ This course focuses on leadership and communication in groups and teams through an exploration of team-based leadership and shared visions. Students will develop a better understanding of themselves as leaders and followers and the role of others as leaders and followers within a community. Topics include: community-based models and theories related to effective groups and teams, processes of teams, team management, relationships in teams, creating a shared mission and vision amongst members, improving and evaluating team performance, determining leadership strategies based on team dynamics, and shared leadership. Recommended preparation: AGED 251

4. Make the following curricular changes to the A**gricultural Science, Communication and Leadership Major** (B.S.Ag.L.S.):
Required course work includes the university requirements (see regulation J-3) and:

Agricultural and Life Sciences Core	33-34
Agricultural Science, Communication and Leadership Courses	

ACCT 201	Introduction to Financial Accounting	3
AGEC 289	Agricultural Markets and Prices	3
AGED 180	Introduction to Agricultural Education	1
AGED 251	Principles of Agricultural Communications and Leadership	3
AGED 450	Developing Leaders	3
AGED 498	Internship	5-10
Upper-Division Agricultural Economics Elective		**3**
Subject Area Electives		**20**
Select one of the following:		
10 credits in two of the following subject areas:		
Agricultural System Management		
Animal and Veterinary Science		
Entomology		
Family and Consumer Science		
Food Science		
Plant Science/Rangeland Ecology & Management		
Soils		
OR 15 credits from one of the following subject areas AND 5 credits from a Foreign Language:		
Agricultural System Management		
Animal and Veterinary Science		
Entomology		
Family and Consumer Science		
Food Science		
Plant Science/Rangeland Ecology & Management		
Soils		
Communication Electives		**12**
Select 12 credits of communication electives including one upper-division course:		
COMM 233	Interpersonal Communication	
COMM 332	Communication and the Small Group	
COMM 410	Conflict Management	
COMM 431	Applied Business and Professional Communication	
EDCI 410	Technology, Teaching and Learning	
JAMM 100	Media and Society	
JAMM 121	Media Writing	
JAMM 252	Introduction to Integrated Media Campaigns	
Leadership Electives		**9**
Select 9 credits of leadership electives:		
AGED 359	Developing 4-H Youth Programs	
AGED 448	Foundations of Extension Education	
MHR 311	Introduction to Management	
MHR 413	Organizational Behavior	
MHR 418	Managing Organization Design and Leading Changes	
NRS 311	Public Involvement in Natural Resource Management	

MS 101	Intro to the Army & Critical Thinking	
MS 102	Intro to the Profession of Arms	
MS 201	Foundations of Leadership I	
MS 202	Foundations of Leadership II	
REC 254	Camp Leadership in Recreation and Sport	
Total Hours		**95-101**

Courses to total 120 credits for this degree

AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

1. Add the following courses:

   AGEC 469 Risk Management: Commodity Trading
   1 credit
   One-credit lab which engages students in the actual trading of agricultural commodity futures and options. Course emphasizes concepts, tools and strategies as they relate to identifying trading opportunities across agricultural commodities, managing portfolio risk and increasing operational profits through implementing trading positions in commodity futures markets.
   Prereq: Instructor Permission

   AGEC 490 Commodity Price Analysis
   3 credits
   Methods used to analyze factors affecting agricultural prices, analysis of agricultural prices and price movements with respect to time, space, and form, and examination of methods of price forecasting and techniques of time series analysis.
   Prereq: STAT 251, AGEC 489 or FIN 466, AGEC 289

2. Change the following courses:

   AGEC 433 Advanced Sales
   3 credits
   Building on principles of professional sales, students will learn additional processes, procedures and practices of sales professionals. Students will apply the old and new concepts when selling a product to be determined to actual customers.
   Prereq: AGEC 333 ~~and MKTG 422.~~

ANIMAL AND VETERINARY SCIENCE

1. Make the following curricular changes to the **Animal Veterinary Science Major** (B.S.A.V.S.):
   Required course work includes the university requirements (see regulation J-3) and completion of one of the following four options:

AVS 109	The Science of Animals that Serve Humanity	4
AVS 110	Science of Animal Husbandry	3
AVS 110L	Science of Animal Husbandry Lab	1
AVS 305	Animal Nutrition	4
AVS 371 & AVS 373	Anatomy and Physiology and Anatomy and Physiology Lab	4
BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
COMM 101	Fundamentals of Public Speaking	2

STAT 251	Statistical Methods	3
ENGL 313 or ENGL 317	Business Writing Technical Writing	3
Select one of the following:		**3-4**
MATH 143	Pre-calculus Algebra and Analytic Geometry	
MATH 160	Survey of Calculus	
MATH 170	Analytic Geometry and Calculus I	
Select one of the following options:		**27-65**
Business		
Dairy Science		
Production		
Science/Pre-veterinary		
Total Hours		**58-97**
A. Business Option		
Select 6 credits of Business Electives:		**6**
ACCT 201	Introduction to Financial Accounting	
ACCT 202	Introduction to Managerial Accounting	
AGEC 278	Farm and Agribusiness Management	
AGEC 289	Agricultural Markets and Prices	
AVS 306	Feeds and Ration Formulation	
AVS 363	Animal Products for Human Consumption	
AVS 450	Issues in Animal Agriculture	
BLAW 265	Legal Environment of Business	
CHEM 275	Carbon Compounds	
ECON 201	Principles of Macroeconomics	
ECON 202	Principles of Microeconomics	
Select 6 credits of Upper Division Agricultural Economics		**6**
AGEC 301 or AGEC 302	Managerial Economics: Production Managerial Economics: Consumption & Markets	3
AVS 222 or AVS 452	Animal Reproduction and Breeding Physiology of Reproduction	3-4
CHEM 101 or CHEM 111	Introduction to Chemistry Principles of Chemistry I	3
CHEM 101L or CHEM 111L	Introduction to Chemistry Laboratory Principles of Chemistry I Laboratory	1
AVS 472 or AVS 474	Dairy Cattle Management Beef Cattle Science	3
Select one of the following:		**3**
AVS 466	Equine Science and Management	
AVS 472	Dairy Cattle Management	
AVS 474	Beef Cattle Science	
AVS 476	Sheep Science	
Total Hours		**28-29**
Courses to total 120 credits for this degree		
B. Dairy Science Option		

AGEC 278	Farm and Agribusiness Management	4
AGEC 289	Agricultural Markets and Prices	3
AVS 172	Principles and Practices of Dairy Science	2
AVS 306	Feeds and Ration Formulation	4
AVS 330	Genetics of Livestock Improvement	3
AVS 363	Animal Products for Human Consumption	4
AVS 411	Ruminant Nutrition	3
AVS 450	Issues in Animal Agriculture	2
AVS 463	Growth and Lactation	3
AVS 471	Animal Disease Management	3
AVS 472	Dairy Cattle Management	3
AVS 475	Advanced Dairy Management	3
CHEM 275	Carbon Compounds	3
ECON 202	Principles of Microeconomics	3
AVS 222 or AVS 452	Animal Reproduction and Breeding Physiology of Reproduction	3-4
CHEM 101 or CHEM 111	Introduction to Chemistry Principles of Chemistry I	3
CHEM 101L or CHEM 111L	Introduction to Chemistry Laboratory Principles of Chemistry I Laboratory	1
~~BIOL~~ EPPN154 or BIOL 250	~~Introductory Microbiology~~Microbiology and the World Around Us General Microbiology	3
~~BIOL~~EPPN 155 or BIOL 255	~~Introductory Microbiology Laboratory~~ Microbiology and the World Around Us: Laboratory General Microbiology Lab	1-2
Total Hours		**54-56**

Courses to total 120 credits for this degree

C. Production Option

AGEC 278	Farm and Agribusiness Management	4
AGEC 289	Agricultural Markets and Prices	3
AVS 306	Feeds and Ration Formulation	4
AVS 330	Genetics of Livestock Improvement	3
AVS 363	Animal Products for Human Consumption	4
AVS 411	Ruminant Nutrition	3
AVS 450	Issues in Animal Agriculture	2
AVS 471	Animal Disease Management	3
CHEM 275	Carbon Compounds	3
ECON 202	Principles of Microeconomics	3
REM 151	Rangeland Principles	3
AVS 222 or AVS 452	Animal Reproduction and Breeding Physiology of Reproduction	3-4
CHEM 101 or CHEM 111	Introduction to Chemistry Principles of Chemistry I	3
CHEM 101L or CHEM 111L	Introduction to Chemistry Laboratory Principles of Chemistry I Laboratory	1

~~BIOL~~EPPN 154	~~Introductory Microbiology~~ Microbiology and the World Around Us	3
or BIOL 250	General Microbiology	
~~BIOL~~EPPN 155	~~Introductory Microbiology Laboratory~~ Microbiology and the World Around Us: Laboratory	1-2
or BIOL 255	General Microbiology Lab	
AVS 472	Dairy Cattle Management	3
or AVS 474	Beef Cattle Science	
Select a 300 or 400 level Life Science Elective from one of the following subjects:		**3**
BIOL		
ENT		
FISH		
PLSC		
REM		
SOIL		
WLF		
Select one of the following:		**3**
AVS 466	Equine Science and Management	
AVS 472	Dairy Cattle Management	
AVS 474	Beef Cattle Science	
AVS 476	Sheep Science	
Total Hours		**55-57**
Courses to total 120 credits for this degree		
D. Science/Preveterinary Option		
AVS 452	Physiology of Reproduction	4
BIOL 114	Organisms and Environments	4
CHEM 111	Principles of Chemistry I	3
CHEM 111L	Principles of Chemistry I Laboratory	1
CHEM 112	Principles of Chemistry II	4
CHEM 112L	Principles of Chemistry II Laboratory	1
CHEM 277	Organic Chemistry I	3
CHEM 278	Organic Chemistry I: Lab	1
PHYS 111	General Physics I	3
PHYS 111L	General Physics I Lab	1
PHYS 112	General Physics II	3
PHYS 112L	General Physics II Lab	1
Select one of the following:		**3-4**
BIOL 310	Genetics	
& BIOL 315	and Genetics Lab	
GENE 314	General Genetics	
~~BIOL~~EPPN 154	~~Introductory Microbiology~~ Microbiology and the World Around Us	3
or BIOL 250	General Microbiology	
~~BIOL~~EPPN 155	~~Introductory Microbiology Laboratory~~ Microbiology and the World Around Us: Laboratory	1-2
or BIOL 255	General Microbiology Lab	
BIOL 300	Survey of Biochemistry	3-4

or BIOL 380	Biochemistry I	
First Year in Veterinary School (32 credits) or the following courses		
AVS 306	Feeds and Ration Formulation	4
AVS 330	Genetics of Livestock Improvement	3
AVS 450	Issues in Animal Agriculture	2
AVS 471	Animal Disease Management	3
Select one of the following:		**3**
AVS 411	Ruminant Nutrition	
AVS 463	Growth and Lactation	
AVS 475	Advanced Dairy Management	
BIOL 432	Immunology	
BIOL 447	Virology	
BIOL 474	Principles of Developmental Biology	
BIOL 483	Mammalogy	
CHEM 372	Organic Chemistry II	
AVS 472 or AVS 474	Dairy Cattle Management Beef Cattle Science	3
Select one of the following:		**3**
AVS 466	Equine Science and Management	
AVS 472	Dairy Cattle Management	
AVS 474	Beef Cattle Science	
AVS 476	Sheep Science	
Total Hours		**60-63**
Courses to total 120 credits for this degree		

ENTOMOLOGY, PLANT PATHOLOGY, AND NEMATOLOGY

1. Add the following courses:

ENT 411 Veterinary & Medical Entomology
3 credits
Joint-listed with ENT 511
This course will explore why insects are such efficient disease vectors, how blood feeding evolved, the impact of insects and related arthropods and vector-borne diseases on humans and animals worldwide, and what is being done to combat the resurgence of many of these diseases. Offered in spring semester in odd years.
Prereq: BIOL 115 and EPPN 154 OR BIOL 250

ENT 511 Veterinary & Medical Entomology
3 credits
Joint-listed with ENT 411
This course will explore why insects are such efficient disease vectors, how blood feeding evolved, the impact of insects and related arthropods and vector-borne diseases on humans and animals worldwide, and what is being done to combat the resurgence of many of these diseases. Offered in spring semester in odd years.

ENT 476 Medical Parasitology
3 credits
Joint-listed with ENT 576
This course will explore the biology of eukaryotic parasites as they impact human health. Topics will include blood, gastrointestinal, and multi-organ parasites. The life cycles, clinical importance, global impact, and cutting edge research on these parasites will be reviewed. Offered in spring semester in even years.
Prereq: EPPN 154 OR BIOL 250 and BIOL 310 or BIOL 312

ENT 576 Medical Parasitology
3 credits
Joint-listed with ENT 476
This course will explore the biology of eukaryotic parasites as they impact human health. Topics will include blood, gastrointestinal, and multi-organ parasites. The life cycles, clinical importance, global impact, and cutting edge research on these parasites will be reviewed. Offered in spring semester in even years.

ENT 481 Arthropod and Nematode Physiology
3 credits
Joint-listed with ENT 581
This course will compare and contrast fundamental physiological systems of insects, related arthropods, and nematodes, including those of medical, veterinary, agricultural, and ecological importance as well as those that have been established as critically important model organisms for biology. Course will be taught in the fall semester of odd years.
Prereq: BIOL 115 and EPPN 154 OR BIOL 250

ENT 581 Arthropod and Nematode Physiology
3 credits
Joint-listed with ENT 481
This course will compare and contrast fundamental physiological systems of insects, related arthropods, and nematodes, including those of medical, veterinary, agricultural, and ecological importance as well as those that have been established as critically important model organisms for biology. Course will be taught in the fall semester of odd years.
Prereq: BIOL 115 and EPPN 154 OR BIOL 250

EPPN 110 Introduction to Global Disease Ecology
3 credits
Introduction to the Global Disease Ecology major Course will discuss research and internship opportunities, and potential career paths in human, animal, and plant health. Focus on communication, ethics and the nature of science.

EPPN 220 Global Disease Ecology Seminar
3 credits
Seminar leading to development of the research proposal and academic plan for the Global Disease Ecology major. The final product will be the research proposal prepared by the students and approved by their research mentor.
Prereq: EPPN 110

EPPN 440 Research Practicum
3 credits
Senior capstone research experience for students working toward a BS. in Global Disease Ecology. Students will work one on one with a faculty mentor, or outside mentor plus a faculty co-mentor, to pursue research questions developed in EPPN 220, Global Disease Ecology Seminar.
Prereq: EPPN 110 and EPPN 220

EPPN 506 Biology of Vector-borne Diseases Workshop
3 credits
The goal of the course is to create a knowledge network for a diverse community of practitioners that applies interventions to plant, animal and human vector-borne diseases. The course fits into graduate degree programs and academic certificate programs in CALS, CNR, COS and the College of Engineering. The course features sessions on selected themes developed by instructors from different areas of expertise. The instructors will present short talks, relevant discussion questions, podcasts and case studies. Themes of the course will focus on the common biological and abiotic drivers of diseases that are carried by vectors, and will include diseases of humans, animals and plants. Typical subject areas include, but are not limited to: 1) host and pathogen biology and heterogeneity, 2) virulence and resistance mechanisms, 3) diagnostics, 4) containment, 5) disease ecology, 6) global change, 7) emergence and re-emergence of pathogens and 8) various methods of controlling disease.
Prereq: Permission

FAMILY AND CONSUMER SCIENCES

1. Add the following courses:
   FCS 359 Apparel Technology
   3 credits
   Introduction to e-Textiles, laser cutting and 3D printing in an apparel or wearable context. Students will learn how to design within each technology and produce prototypes for evaluation.

   FCS 375 Recipe Development & Culinary Exploration
   3 credits
   Application of recipe development principles through completion of culinary activities centered around individual culinary goals and interests. Includes recipe conversion, testing, and evaluation.

2. Change the following courses:
   FCS ~~319~~219 Digital Illustration for the Apparel Industry
   3 credits
   Introduction to digital illustration software including apparel illustration tools, editing and coloring, working in the digital environment, and digital board building. Students follow an industry-typical concept and design process for a target customer, including corresponding design boards, line of garments, line presentation, and creation of an online portfolio site.
   Prereq: FCS 119, FCS 123, and FCS 224.

   FCS 323 Apparel Product Development
   3 credits
   Analysis of textile and apparel products and processes relative to design, development, and production methods, including evaluation of consumer value. Students must complete this course with a grade of

'C' or higher as a prerequisite to future Apparel, Textiles and Design courses. Open to all students with a sophomore standing or higher.
~~**Prereq:** FCS 123 with a grade of 'C' or better and FCS 224 with a grade of 'C' or better; or Permission.~~

FCS ~~415~~325 Computer-Aided Pattern Drafting
3 credits
This course builds on existing patternmaking skills by applying methods and techniques for developing patterns using computer-aided pattern drafting software and includes grading, markers, and graded spec sheets.
Prereq: FCS 324

FCS 424 ~~Apparel Product Line Development: Senior Capstone~~ Senior Experience: Apparel Design
4 credits
Gen Ed: Senior Experience
Advanced patternmaking, draping, and construction skills, combined with aesthetic principles of design, prepare students to create apparel lines. A senior capstone to design and product development studies. Two 3-hour studios a week and assigned work.
Prereq: FCS 119, FCS 319, FCS 323, FCS 324, or Permission

FCS 123 Textiles
3 credits
Fiber, yarn, and fabric properties, color and finishes as they relate to performance, care, and consumer satisfaction. Students must complete this course with a grade of 'C' or higher as a prerequisite to future Apparel, Textiles and Design courses. (Fall only)
~~**Prereq:** Apparel, Textiles, and Design; or Child, Family, and Consumer Studies major; or Permission.~~

3. Make the following curricular changes to the **Apparel, Textiles, and Design Major** (B.S.F.C.S.):
This major considers apparel, textiles and design as basic human needs, consumer products, historical and cultural artifacts, and communication tools. Students who wish to graduate in Apparel, Textiles and Design (ATD) must earn a grade of "C" or higher in all required ATD coursework, including Area of Focus courses.
…
Required course work includes the university requirements (see regulation J-3) and:

ART 100	World Art and Culture	3
MKTG 321	Marketing	3
FCS 105	Individual and Family Development	3
FCS 119	Introduction to Fashion and the Apparel Industry	3
FCS 123	Textiles	3
FCS 224	Apparel Construction and Assembly Processes	3
FCS 295	Career Development in Apparel & Textiles	1
FCS ~~3~~219	Digital Illustration for the Apparel Industry	3
FCS 323	Apparel Product Development	3
FCS 324	Patternmaking	4
FCS 329	History of Western Dress	3
FCS 419	Dress and Culture	3

FCS 424	Senior Experience: Apparel Design ~~Apparel Product Line Development: Senior Capstone~~	4
FCS 432	Apparel Promotion and Merchandising	3
FCS 448	Consumer Economic Issues	3
FCS 494	Portfolio Development	3
ENGL 313 or ENGL 317	Business Writing Technical Writing	3
PSYC 101 or SOC 101	Introduction to Psychology Introduction to Sociology	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**
PSYC 320	Introduction to Social Psychology	
SOC 313	Collective Behavior	
SOC 340	Social Change & Globalization	
Select 3 credits of Anthropology electives		**3**
Select an area of focus with the guidance of an advisor		**18**
Total Hours		**81-82**
Courses to total 120 credits for this degree		

4. Make the following curricular changes to the **Food and Nutrition Major** (B.S.F.C.S.):
Required course work includes the university requirements (see regulation J-3) and one of the following options.
This major prepares students for careers with government agencies, commodity groups, health and fitness agencies and businesses, and some components of the food industry. In addition, the course work provides excellent background for those wishing to pursue advanced degrees in medicine or nutrition or dietetics. Students wishing to become a Registered Dietitian Nutritionist will be prepared to apply to an accredited master's program in nutrition and dietetics.

ACCT 201	Introduction to Financial Accounting	3
BIOL 120	Human Anatomy	4
BIOL 121	Human Physiology	4
BIOL 300	Survey of Biochemistry	3
FCS 205	Concepts in Human Nutrition	3
FCS 270	Scientific Principles of Food Preparation	3
FCS 275	Experimental Foods	2
FCS 361	Advanced Nutrition	3
FCS 362	Introduction to Clinical Dietetics	3
FCS 384	Quantity Food Production and Equipment	3
FCS 385	Quantity Food Production and Equipment Lab	2
FCS 387	Food Systems Management	3
FCS 389	Intro Clinical Nutrition Lab	1
FCS 411	Global Nutrition	3
FCS 463	Helping Skills in Dietetics	2

FCS 473	Community Nutrition	3
FCS 486	Nutrition in the Life Cycle	3
FCS 492	Nutrition Education in the Life Cycle	3
PSYC 101	Introduction to Psychology	3
SOC 101	Introduction to Sociology	3
STAT 251	Statistical Methods	3
CHEM 101 or CHEM 111	Introduction to Chemistry Principles of Chemistry I	3
CHEM 101L or CHEM 111L	Introduction to Chemistry Laboratory Principles of Chemistry I Laboratory	1
CHEM 275 or CHEM 277	Carbon Compounds Organic Chemistry I	3
FCS 105 or PSYC 305	Individual and Family Development Developmental Psychology	3
MATH 143 or MATH 170	Pre-calculus Algebra and Analytic Geometry Analytic Geometry and Calculus I	3-4
Select one of the following:		4-5
~~BIOL~~EPPN 154 & ~~BIOL~~EPPN 155	~~Introductory Microbiology~~ Microbiology and the World Around Us and ~~Introductory Microbiology Laboratory~~ Microbiology and the World Around Us: Laboratory	
BIOL 250 & BIOL 255	General Microbiology and General Microbiology Lab	
Select 8 credits of FCS electives		8
Total Hours		**85-87**

Courses to total 120 credits for this degree

FOOD SCIENCE

1. Change the following courses:

FS 302 Food Processing Lab
1 credit
Application of specialized techniques, concepts and practices of food processing. Field Trip required. Cooperative: open to WSU degree-seeking students.
~~**Prereq:** FS 110 or FS 220; and MATH 160 or MATH 170; and STAT 251~~
Coreq: FS 303

FS 304 Cereal Chemistry and Processing
3 credits
This course has been designed to provide students with a breadth of knowledge in the field of cereal grain science. This course will cover cereal and legume structure, chemistry, and function as it relates to processing and utilization. Cooperative: open to WSU degree-seeking students.
Prereq: CHEM 275 ~~and~~or CHEM 277.

FS 406 Evaluation of Dairy Products
2 credits

~~Identifying defects in dairy products and relating these defects to their probable cause; remedies.~~ Identifying attributes of different dairy products caused by production, processing, and storage issues; determining probable cause of those attributes and how to reduce their occurrence. Recommended Preparation: FS 329, FS 429, and FS 433. Cooperative: open to WSU degree-seeking students. (Spring only)

FS 433 Food Engineering Lab
1 credit
~~To enhance~~ Enhances the learning experience of the students taking FS 432 through laboratories, problem sessions and group discussions. ~~Field Trip Required~~. Cooperative: open to WSU degree-seeking students.
Prereq or Coreq: FS 432

FS 517 Scientific Writing
2 credits, max 4
Planning, writing, reporting, reviewing and evaluating current food-related research. Cooperative: open to WSU degree-seeking students. ~~Open to Food Science Graduate Students Only.~~ Preference will be given to graduate students in their second year or higher of study.

FS 518 Oral Seminar
1 credit
Development of skills and communication tools and techniques for oral presentations of current food science research. Additional projects/assignments required for graduate credit. Cooperative: open to WSU degree-seeking students. ~~Open to Food Science Graduate Students Only.~~ Preference will be given to graduate students in their second or higher year of study.

PLANT SCIENCES

1. Add the following courses:
   PLSC 523 Potato Industry Field Trip
   1 credit
   Six-day field trip to see the southern Idaho potato industry. Experience production, storage, biotechnology, seed, fresh pack and processing, equipment, food science, and agribusiness. One additional class meeting. The course is offered every other year.

2. Make the following curricular changes to the **Biotechnology and Genomics Major** (B.S.Pl.Sc.):
   Required course work includes the university requirements (see regulation J-3) and:

AGED 406 or POLS 441	Exploring International Agriculture Genes and Justice: Comparative Biotechnology Policy Formation	3
BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
ENGL 313 or ENGL 317	Business Writing Technical Writing	3
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~~EPPN 154	~~Introductory Microbiology~~Microbiology and the World Around Us	
&~~BIOL~~ 155	and ~~Introductory Microbiology Laboratory~~Microbiology and the World Around Us: Laboratory	
BIOL 250	General Microbiology	
& 255	And General Microbiology Lab	
Select one of the following:		**4**
CHEM 101 & 101L	Introduction to Chemistry and Introduction to Chemistry Laboratory	
CHEM 111 & 111L	Principles of Chemistry I and Principles of Chemistry I Laboratory	
Select one of the following:		**3-4**
MATH 143	Pre-calculus Algebra and Analytic Geometry	
MATH 160	Survey of Calculus	
MATH 170	Analytic Geometry and 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	Principles of Chemistry II	4
CHEM 112L	Principles of Chemistry II Laboratory	1
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	
ENT 322	General and Applied Entomology	
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		

SOIL AND WATER SYSTEMS

1. Add the following course:
   SOIL 452 Environmental Water Quality
   3 credits
   Joint-listed with SOIL 552
   Engineering design to monitor, evaluate, and minimize non-point pollution from agriculture, environmentally acceptable disposal of wastes, bioremediation. Graduate credit requires an additional project and report. Two lectures and one 3-hour lab a week.
   Prereq: BE 355 and CHEM 112, CHEM 112L; and SOIL 205 or BIOL 250.

   SOIL 552 Environmental Water Quality
   3 credits
   Joint-listed with SOIL 452
   Engineering design to monitor, evaluate, and minimize non-point pollution from agriculture, environmentally acceptable disposal of wastes, bioremediation. Graduate credit requires an additional project and report. Two lectures and one 3-hour lab a week.

2. Make the following curricular changes to the **Agriculture Systems Management Major** (B.S.S.W.S):
   Required course work includes the university requirements (see regulation J-3) and:

Soil and Water Systems Core		
ASM 315	Irrigation Systems and Water Management	3
AGED 406 or SOC 350	Exploring International Agriculture Food, Culture, and Society	3
COMM 101	Fundamentals of Public Speaking	2
ENGL 313 or ENGL 317	Business Writing Technical Writing	3
GEOG 385	GIS Primer	3
MATH 143	Pre-calculus Algebra and Analytic Geometry	3
PLSC 102 or REM 221	The Science of Plants in Agriculture Principles of Ecology	3
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
SOIL 438	Pesticides in the Environment	3
STAT 251	Statistical Methods	3

Agricultural Systems Management Courses		
ACCT 201	Introduction to Financial Accounting	3
ACCT 202	Introduction to Managerial Accounting	3
AGEC 278	Farm and Agribusiness Management	4
AGEC 289	Agricultural Markets and Prices	3
AGEC 356	Agricultural and Rural Policy	3
ASM 107	Beginning Welding	2
ASM 112	Introduction to Agricultural Systems Management	3
ASM 200	Seminar	1
ASM 202	Agricultural Shop Practices	2
ASM 305	GPS and Precision Agriculture	3
ASM 315	Irrigation Systems and Water Management	3
ASM 331	Electric Power Systems for Agriculture	3
ASM 409	Agricultural Tractors, Power Units and Machinery Management	4
ASM 412	Agricultural Safety and Health	2
ASM 433	Agricultural Processing Systems	3
BIOL 102	Biology and Society	3
BIOL 102L	Biology and Society Lab	1
BUS 190	Integrated Business and Value Creation	3
BLAW 265	Legal Environment of Business	3
ECON 202	Principles of Microeconomics	3
Select one of the following:		**4**
CHEM 101 & 101L	Introduction to Chemistry and Introduction to Chemistry Laboratory	
CHEM 111 & 111L	Principles of Chemistry I and Principles of Chemistry I Laboratory	
Select one of the following:		**4**
PHYS 100 & 100L	Fundamentals of Physics and Fundamentals of Physics Lab	
PHYS 111 & 111L	General Physics I and General Physics I Lab	
PHYS 211 & 211L	Engineering Physics I and Laboratory Physics I	
Select one AgEc Elective - Upper Division course		**3**
Select 10 credits of Agricultural and Technical Electives from the following courses or subject areas:		**10**
AGLS 495	CALS Ambassadors	
ASM 210	Small Engines	
ASM 398	Internship	
ASM 498	Internship	
ASM 499	Directed Studies	
FCS 346	Personal and Family Finance and Management	
FCS 446	Financial Counseling and Debt Management	
AGEC		
AGED		

AVS	
FS	
PLSC	
SOIL	
REM	
Select one Life Science Elective	**3**
Total Hours	**109**
Courses to total 128 credits for this degree	

College of Art and Architecture

ARCHITECTURE

1. Make the following curricular changes to the **Architecture Minor**:

ARCH 151	Introduction to the Built Environment	3
ARCH 385	Global History of Architecture	3
ARCH 386	Global History of Architecture II	3
Select 10 credits from the following:		**10**
ARCH 154	Introduction to Architectural Graphics	
ARCH 253	Architectural Design I	
ARCH 254	Architectural Design II	
ARCH 266	Materials and Methods	
ARCH 388	Architectural Theory	
ARCH 463	Environmental Control Systems I	
ARCH 464	Environmental Control Systems II	
ARCH 483	Urban Theory and Issues	
~~LARC 251~~	~~Introduction to Principles of Site Design~~	
Total Hours		**19**
Courses to total 19 credits for this minor		

2. Make the following curricular changes to the **Architecture Major (B.S.Arch.):**
Required course work includes the university requirements (see regulation J-3) and:

ARCH 151	Introduction to the Built Environment	3
ARCH 154	Introduction to Architectural Graphics	3
ARCH 243	Media in Architecture	3
ARCH 253	Architectural Design I	4
ARCH 254	Architectural Design II	4
ARCH 266	Materials and Methods	3
ARCH 353	Architectural Design III	6
ARCH 354	Architectural Design IV	6
ARCH 361	Structural Systems I	3
ARCH 362	Structural Systems II	3
ARCH 385	Global History of Architecture	3
ARCH 386	Global History of Architecture II	3
ARCH 388	Architectural Theory	3

ARCH 454 & 454	Architectural Design: Vertical Studio and Architectural Design: Vertical Studio (Must be taken twice for credit)	12
ARCH 461	Building Assemblies	3
ARCH 463	Environmental Control Systems I	3
ARCH 463L	Environmental Control System I Lab	1
ARCH 464	Environmental Control Systems II	3
ARCH 464L	Environmental Control System II Lab	1
ARCH 483	Urban Theory and Issues	3
ART 110	Integrated Art and Design Communication	2
ART 112	Drawing as Integrated Design Thinking	2
ART 121	Integrated Design Process	2
~~LARC 251~~	~~Introduction to Principles of Site Design~~	~~3~~
PHYS 111	General Physics I	3
PHYS 111L	General Physics I Lab	1
Select one of the following:		**3-4**
CS 112	Computational Thinking and Problem Solving	
~~MATH 160~~	~~Survey of Calculus~~	
MATH 170	Analytic Geometry and Calculus I	
MATH 175	Analytic Geometry and Calculus II	
PHIL 202	Introduction to Symbolic Logic	
STAT 251	Statistical Methods	
Total Hours		86-87~~89-90~~

Courses to total 124 credits for this degree (including at least 3 cr of 200-level or above courses taken outside the disciplines of architecture; landscape architecture; art and design; interior design; and virtual technology and design; and 3 cr of 200-level or above courses taken within the disciplines; and at least 3 credits of 200-level or above courses taken in any discipline. Credits earned in completion of an academic minor may be substituted).

ART AND DESIGN

1. Add the following course:
   ART 513 Pedagogy Seminar
   3 credits
   This seminar designed for Graduate students teaching and/or interested in teaching in higher-ed creative classrooms. Assignments and discussions designed to further critical awareness and build adaptive strategies that foster engagement in a contemporary, creative classroom
   Prereq: Instructor permission

2. Change the following courses:
   ART 111 Drawing I
   ~~2~~3 credits
   Freehand drawing; emphasis on expressive use of materials. Two ~~2~~3-hour studios a wk.

   ART 495 ~~BFA Senior Thesis~~Critical Art Writing Seminar
   ~~2~~3 credits~~, max 4~~
   Gen Ed: Senior Experience

Open only to B.F.A. Art and Design majors who have been admitted to the professional program through the BFA Art and Design Review. ~~BFA majors take 2 semesters. Preparation of thesis, portfolio, and senior exhibition.~~ Writing portfolio includes: visual analysis, short essay, statement of intent, artist's statements, and other pertinent types of writing.
Prereq: Senior standing and completion of 15 cr in 300-level art courses with a minimum grade of C and a minimum GPA of 2.75.

BIOREGIONAL PLANNING AND COMMUNITY DESIGN

1. Change the following courses:
   BIOP 520 Introduction to Bioregional Planning
   3 credits
   This class introduces ~~first semester Bioregional Planning and Community Design~~ students to bioregional planning concepts and ~~current implementation practices.~~ shows the difference between "traditional' planning and bioregional planning, and explores the relevance of "traditional" planning and bioregional planning for communities in the American West.

   BIOP 522 Bioregional Planning Methods
   3 credits
   This is an overview course of the methods used in making evidence based decisions in regional planning. This course covers the most common ways that planners collect and analyze data. The course specifically focuses on the challenges of the collection, analysis and evaluation of data within the setting of non-metropolitan areas and rural communities.~~will focus on the scientific method, statistics, hypothesis testing, regression analysis, spatial analysis, qualitative analysis, and design methods; giving students a feel for power and limitations of each.~~

   BIOP 530 ~~Public~~ Planning Theory and Process
   ~~2 to~~ 3 credits
   Seminar provides a historical and theoretical basis to address the application of knowledge to public and political decisions and the ethics of professional practice within public and non-governmental settings. Readings, discussions, and essays ~~will~~ focus on underlying traditions and assumptions, cultural contexts, social justice and "planner" roles. ~~Non-majors may choose to take the course for two credits, which will not include a professional ethics segment.~~

INTERIOR DESIGN

1. Create the following prefix:
   IAD (Interior Architecture and Design)

2. Add a course:
   IAD 231 Design Communication
   2 credits
   Development of Design Communication tools and practices relevant to interior design, including presentation techniques using various materials/methods for communication of interior design processes and solutions, as well as development of interior design branding and portfolios.
   Prereq: Admission to Second Year / Sophomore Standing

3. Make the following changes to the **Interior Design Major (B.I.D.):**

The Interior Architecture and Design program is a four-year professional program that leads to a Bachelor of Interior Architecture ~~Design~~. Our mission is to serve as Idaho's only public, accredited, professional interior architecture and design program by providing a strong interdisciplinary design experience through a curriculum accredited by the Council for Interior Design Accreditation (CIDA), allied research, and outreach opportunities. We prepare our graduates to serve society through their professional and community work.

Due to the unique configuration and relationship between Architecture and Interior Architecture and Design, students in the ~~interior design~~ Interior Architecture and Design program graduate with a major in ~~interior design~~ Interior Architecture and – with one additional course - a minor in ~~architecture~~Architecture. Students can also minor in other disciplines of their choice. Students have the option of completing seamless degrees in ~~interior design and architecture~~ Interior Architecture and Design and Architecture over the period of seven years, thus graduating with a B.I.~~D~~A. in ~~interior design~~ Interior Architecture and an M.Arch. in ~~architecture~~Architecture. Students must hold a minimum GPA of 2.50. A portfolio and transcript review will be conducted in the spring of the sophomore year. ~~The portfolio, of no more than 10 pages, should be submitted in an 11" x 17" format.~~ Results of the evaluation are made known to applicants in July.

Program(s) permission is required for admittance into Architecture and Interior Architecture and Design studio courses:

ARCH 253	Architectural Design I	4
ARCH 254	Architectural Design II	4
~~ID~~IAD 152	Interior Design I	3
~~ID~~IAD 254	Architectural Design II	4
~~ID~~IAD 351	Interior Design III	6
~~ID~~IAD 352	Interior Design IV	6
~~ID~~IAD 451	Interior Design V	6
~~ID~~IAD 452	Interior Design VI	6

and students must achieve a minimum grade of C in the previous Interior Design studio course to enroll in the next sequential studio course.

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

ARCH 385 or ARCH 386	Global History of Architecture Global History of Architecture II	3
ARCH 151	Introduction to the Built Environment	3
ARCH 154	Introduction to Architectural Graphics	3
ARCH 243	Media in Architecture	3
ARCH 253	Architectural Design I	4
ARCH 266	Materials and Methods	3
ARCH 463	Environmental Control Systems I	3
ARCH 463L	Environmental Control System I Lab	1
ARCH 464	Environmental Control Systems II	3
ARCH 464L	Environmental Control System II Lab	1
ARCH 475	Professional Practice	3
ART 100	World Art and Culture	3
ART 110	Integrated Art and Design Communication	2
ART 112	Drawing as Integrated Design Thinking	2

ART 121	Integrated Design Process	2
COMM 101	Fundamentals of Public Speaking	2
~~ID~~IAD 151	Introduction to Interior Design	3
~~ID~~IAD 152	Interior Design I	3
IAD 231	Design Communication	2
~~ID~~IAD 254	Architectural Design II	4
~~ID~~IAD 281	History of the Interior I	3
~~ID~~IAD 282	History of the Interior II	3
~~ID~~IAD 332	Furniture Design and Construction	4
~~ID~~IAD 344	Digital Design Tools for Interior Design	2
~~ID~~IAD 351	Interior Design III	6
~~ID~~IAD 352	Interior Design IV	6
~~ID~~IAD 368	Materials and Specifications	3
~~ID~~IAD 410	Capstone Proposal Development	2
~~ID~~IAD 443	Universal Design	3
~~ID~~IAD 451	Interior Design V	6
~~ID~~IAD 452	Interior Design VI	6
Total Hours		99~~97~~

Courses to total 126 credits for this degree

VIRTUAL TECHNOLOGY AND DESIGN

1. Add the following courses:

VTD 101 Introduction to Virtual Reality
3 credits
This course explores introductory design methods for virtual reality (VR) design and technical application. Designed to allow students the ability to rapidly develop their programming, and technical design skills required to produce VR experiences. Three 1hr online lecture/lab a wk and associated work.

VTD 151L Lab: Virtual World Building 1
1 credit
This course is designed to support and further develop the comprehension of virtual reality design technology within the VTD 151: Virtual World Building 1 course.
Coreq: VTD 151 or Permission

VTD 152L Lab: Virtual World Building 2
1 credit
This course is designed to support and further develop the comprehension of virtual reality design technology within the VTD 152: Virtual World Building 2 course.
Coreq: VTD 152 or Permission

VTD 153L Lab: Virtual World Building 3
1 credit
This course is designed to support and further develop the comprehension of virtual reality design technology within the VTD 153: Virtual World Building 3 course.

Coreq: VTD 153 or Permission
VTD 154L Lab: Virtual World Building 4
1 credit
This course is designed to support and further develop the comprehension of virtual reality design technology within the VTD 154: Virtual World Building 4 course.
Coreq: VTD 154 or Permission
VTD 201 History and Theory of VR
3 credits
This seminar course is designed to develop the historical and philosophical understanding of virtual reality (VR) technology and its cultural evolution. The course will explore the formal description of VR technology and interpret recent psychological theories of VR knowledge construction.
Prereq: VTD 154

VTD 301 Theory and Applications of VR
3 credits
This seminar course is designed to develop the student's understanding of virtual reality (VR) design theory and application. The course will challenge students to develop new concepts for VR that have the potential to significantly impact society and expand on current concepts of the built environment.
Prereq: VTD 201 or permission

2. Change the following courses:
VTD 271 ~~Interactive Technologies~~ Cross-Reality Technology 1
3 credits
~~Exploration of technologies to create and deliver interactive and immersive applications. Focus on navigation, way-finding and behavior issues associated with virtual environments.~~ Introduction to the fundamentals of Cross-Reality (XR) technologies, explore the development and delivery of interactive immersive digital worlds that transform/combine physical reality into virtual experiences. Two 1-1/2hr lecture/lab a wk and associated work. (Fall only)
Prereq: VTD 154 and VTD 244; or Permission.

VTD 372 ~~Advanced Interactive Technologies~~ Cross-Reality Technology 2
3 credits
~~Exploration of advanced methods for the creation and delivery of interactive and immersive applications. Focus on object-oriented, event-driven environments and Virtual Reality technologies.~~ Building upon the foundational knowledge of Cross-Reality (XR) technologies, exploring how current and emerging versions of XR technologies can enhance XR interactions (object-oriented and event-driven) and user experiences (story telling/presence/social/ multiuser) in virtual worlds. Two 1-1/2hr lecture/lab a wk and associated work. (Spring only)
Prereq: ~~VTD 244 and~~ VTD 271~~;~~ or Permission.

VTD 400 (s) Seminar
~~Credit arranged.~~3 credits
Prereq: VTD 356 or permission

College of Business and Economics

BUSINESS

1. Change the following courses:

EMBA 534 ~~Managing and~~ Leading Strategic Change
1 credit
This course prepares the student to lead strategic change within his or her organization by examining both the processes needed to bring about effective strategic change as well as the individual leadership abilities needed to lead these change efforts. The course also examines how to build adaptable and agile organizations that are predisposed to embrace (rather than resist) change. The course considers change primarily from the perspective of the organization's executive leadership team, but also explores how mid-level managers can lead strategic change initiatives within an organization.

MKTG 428 Marketing Management
3 credits
Discussion of major marketing management functions, including market and environmental analysis, as well as marketing planning, strategy, implementation, and control concepts; special emphasis on application of such concepts by developing a marketing plan that identifies market opportunities and proposes relevant marketing programs for a given case study. May involve evening exams.
Prereq: MKTG 321, MKTG 324, and MKTG 421~~,~~; and ~~one Tier 1 marketing elective.~~ MKTG 420 or MKTG 422 or MKTG 424 or MKTG 425 or MKTG 426 or MKTG 427 or MKTG 482 or MKTG 495.

PGA 150 PGA Golf Management I
~~2~~3 credits
This course will examine the golf industry and the golf professional's role within the industry. Attention will focus on Tournament Operations, Golf Car Fleet Management, Golf Club Repair and Design. Other topics previewed will be Business Planning and Operations and Customer Relations.
Prereq: PGA 103.

PGA 251 PGA Golf Management II
~~2~~3 credits
This course will examine the golf industry and the golf professional's role within the industry. Attention will focus on Business Communications, Business Planning Operations, Customer Relations, and PGA/PGM Electives. Other topics previewed will be Merchandising Inventory Management and Supervising Delegating.
Prereq: PGA 103, PGA 150 and PGM major.
PGA 385 PGA Golf Management III
~~2~~3 credits
This course will examine the golf industry and the golf professional's role within the industry. Attention will focus on Merchandising Inventory Management and Supervising Delegating. Other topics previewed will be an overview of the Final Experience. (Spring only)
Prereq: PGA 103, PGA 150, and PGA 251.

2. Make the following curricular changes to the **Accounting Major** (B.S.Bus.):
Required course work includes the university requirements (see regulation J-3) the general requirements for graduation from the College of Business and Economics, and:

ACCT 305	Accounting Information Systems	3

ACCT 315	Intermediate Financial Accounting I	3
ACCT 325	Intermediate Financial Accounting II	3
ACCT 385	Cost and Management Accounting	3
ACCT 421	Accounting Data Analytics	3
ACCT 483	Fundamentals of Federal Taxation	3
ACCT 492	Auditing and Controls	3
Select Accounting Electives from the following:		**6**
ACCT 415	Advanced Financial Accounting & Reporting	
~~ACCT 421~~	~~Accounting Data Analytics~~	
ACCT 440	Fraud Examination	
ACCT 484	Federal Taxation of Entities	
ACCT 530	Accounting for Public Sector Entities	
ACCT 585	Estate and Elder Planning	
BLAW 420	Commercial Law	
BLAW 425	Law of Business Entities	
Select on additional course in Communication or Writing beyond the UI general Education requirements:		**3**
COMM 332	Communication and the Small Group	
COMM 335	Intercultural Communication	
COMM 347	Persuasion	
COMM 410	Conflict Management	
COMM 431	Applied Business and Professional Communication	
ENGL 207	Persuasive Writing	
ENGL 313	Business Writing	
ENGL 316	Environmental Writing	
ENGL 317	Technical Writing	
PHIL 201	Critical Thinking	
Select at least one credit from the following experiential learning courses[1]:		**1-6**
ACCT 403	Workshop[2]	
ACCT 498	Accounting Internship Program	
ACCT 595	Practicum in Tutoring	
BUS 429	Vandal Solutions	
ENTR 415	New Venture Creation	
FIN 460	Advanced Student Investment Fund Management	
FIN 467	Barker Capital Management Group	
FIN 468	Market Trading Lab	
MIS 456	Cybersecurity Competition	
OM 439	Systems and Simulation	
Total Hours		~~27~~31-37

Courses to total 120 credits for this degree

[1] This requirement may be waived by completion of relevant accounting experience or another University of Idaho course with approval of department head.

[2] Specific ACCT 403 Workshops include Accounting Professional Development, Internal Control Review, Volunteer Income Taxation Assistance Program, and Study Abroad.

3. Make the following curricular changes to the **Master of Accountancy** (M.Acct.):
The Master of Accountancy degree requires 30 semester credits beyond the bachelor's degree, and is designed to meet the 150-credit requirement for taking the CPA examination in Idaho. Completion of this degree qualifies students to enter the public accounting profession in auditing, tax, or other positions ultimately requiring a CPA license.
Students seeking the M.Acct. degree will develop a degree plan in consultation with their advisors, complete at least 30 credits of course work, and successfully complete a comprehensive paper and portfolio.
If a student has earned a BS in Accounting (or equivalent), the required courses include:

ACCT 586	Contemporary Management Accounting Issues	3
ACCT 590	Advanced Auditing Seminar	3
ACCT 592	Financial Accounting and Reporting Seminar	3
Select two courses from the following:		**6**
ACCT 515	Advanced Financial Accounting & Reporting	
ACCT 521	Accounting Data Analytics	
ACCT 530	Accounting for Public Sector Entities	
ACCT 550	Fraud Examination	
ACCT 561	Comparative Accounting Theory	
ACCT 584	Federal Taxation of Entities	
ACCT 585	Estate and Elder Planning	
ACCT 598	Internship (Max 3 credits)	
ACCT 599	Non-thesis Master's Research (Max 6 credits)	
Additional 15 credits chosen from approved courses		**15**
Total Hours		**~~15~~30**

In addition students must have taken at least one US tax class, and at least one Business Law class at the upper-division undergraduate level or at the graduate level. ~~An additional 15 credits are chosen from approved options.~~ Those electing the thesis option include 6 credits of ACCT 500 in the additional 15 credits (must still complete comprehensive paper and portfolio).
If a student has not earned a BS in Business (or equivalent), in addition to the above mentioned courses, the student must take or have taken at least 24 credits of business, economics, statistics, and business law courses at the undergraduate level or at the graduate level. These courses must include at least two business disciplines (e.g. management, marketing, and finance).

4. Make the following curricular changes to the **PGA Golf Management Option in the Business Economics, Finance, Marketing, Management and Human Resources, Management Information Systems, and Operations Management Majors** (B.S.Bus.):
BUSINESS ECONOMICS
C. PGA Golf Management Option
Required course work includes all Business Economics, the Business Economics General Option requirements and:

PGA 103	Introduction to PGA Golf Management	2
PGA 150	PGA Golf Management I	~~2~~3
PGA 251	PGA Golf Management II [1]	~~2~~3
PGA 298	Internship (MAx 6 credits)	1-3
PGA 385	PGA Golf Management III [1]	~~2~~3
~~PGA 386~~	~~Food and Beverage Hospitality with Lab [2]~~	~~4~~

PGA 398	Internship (Max 6 credits)	1-3
REC 105	Teaching Golf I	2
REC 205	Teaching Golf II	2
REC 305	Teaching Golf III	2
Total Hours		~~20-24~~19-23

[1] PGA 251 and PGA 385, together, can be used to meet the requirement for the Specialized Elective or the Marketing & Entrepreneurship Elective.

~~[2] PGA 386 can be used to meet the Operations Management Elective requirement.~~

Courses to total ~~130~~129 credits for this degree
Students must have a 12.0 handicap or better to enter this program. International students can complete the degree requirements, but membership to the PGA of America requires US Citizenship or Resident Alien status.

FINANCE

A. PGA Golf Management Option

Required course work includes all Finance requirements and:

PGA 103	Introduction to PGA Golf Management	2
PGA 150	PGA Golf Management I	~~2~~3
PGA 251	PGA Golf Management II	~~2~~3
PGA 298	Internship	1-3
PGA 385	PGA Golf Management III [1]	~~2~~3
~~PGA 386~~	~~Food and Beverage Hospitality with Lab [1]~~	~~4~~
PGA 398	Internship [1]	1-3
REC 105	Teaching Golf I	2
REC 205	Teaching Golf II	2
REC 305	Teaching Golf III	2
Total Hours		~~20-24~~19-23

[1] PGA 385~~, PGA 386,~~ or PGA 398 can be used to cover the two supporting electives (6 cr).

Courses to total ~~130~~129 credits for this degree
Students must have a 12.0 handicap or better to enter this program. International students can complete the degree requirements, but membership to the PGA of America requires US Citizenship or Resident Alien status

MARKETING

C. PGA Golf Management Option

PGA 103	Introduction to PGA Golf Management	2
PGA 150	PGA Golf Management I	~~2~~3
PGA 251	PGA Golf Management II	~~2~~3
PGA 298	Internship (Max 6 credits)	1-3
PGA 385	PGA Golf Management III	~~2~~3
~~PGA 386~~	~~Food and Beverage Hospitality with Lab~~	~~4~~
PGA 398	Internship (Max 6 credits)	1-3
REC 105	Teaching Golf I	2
REC 205	Teaching Golf II	2
REC 305	Teaching Golf III	2

Tier 1 Marketing Electives		
MKTG 424 or ECON 352	Pricing Strategy and Tactics [2] Intermediate Microeconomic Analysis	3
MKTG 425 or MKTG 426	Retail Distribution Mgmnt Marketing Channels Management	3
MKTG 427 or MKTG 495	Services Marketing Product Development and Brand Management	3
Select one course from the following:		**3**
AGEC 333	Introduction to Sales	
MKTG 420	Integrated Marketing Communication	
MKTG 422	Sales Management	
Total Hours		~~32-36~~31-35

[1] ECON 352 cannot be used to also satisfy the upper-division economics requirement.

Courses to total ~~130~~129 credits for this degree
Students must pass the PGA Player Ability Test
Students must have a 12.0 handicap or better to enter this program.
Students must also be a U.S. citizen to be eligible for PGA membership.

MANAGEMENT AND HUMAN RESOURCES
D. PGA Golf Management Option

Required course work includes all Management and Human Resources requirements, one of the Management and Human Resources emphases, and:

PGA 103	Introduction to PGA Golf Management	2
PGA 150	PGA Golf Management I	~~2~~3
PGA 251	PGA Golf Management II [1]	~~2~~3
PGA 298	Internship	1-3
PGA 385	PGA Golf Management III [1]	~~2~~3
~~PGA 386~~	~~Food and Beverage Hospitality with Lab [2]~~	~~4~~
PGA 398	Internship	1-3
REC 105	Teaching Golf I	2
REC 205	Teaching Golf II	2
REC 305	Teaching Golf III	2
Total Hours		~~20-24~~19-23

[1] PGA 251 and PGA 385, together, can be used to meet the requirement for the Specialized Elective or the Marketing & Entrepreneurship Elective.

~~[2] PGA 386 can be used to meet the Operations Management Elective requirement.~~

Courses to total ~~130~~129 credits for this degree
Students must have a 12.0 handicap or better to enter this program. International students can complete the degree requirements, but membership to the PGA of America requires US Citizenship or Resident Alien status

MANAGEMENT INFORMATION SYSTEMS
A. PGA Golf Management Option

PGA 103	Introduction to PGA Golf Management	2
PGA 150	PGA Golf Management I	~~2~~3

PGA 251	PGA Golf Management II [1]	~~2~~3
PGA 298	Internship (Max 6 credits)	1-3
PGA 385	PGA Golf Management III [2]	~~2~~3
~~PGA 386~~	~~Food and Beverage Hospitality with Lab [2]~~	~~4~~
PGA 398	Internship	1-3
REC 105	Teaching Golf I (Max 6 credits)	2
REC 205	Teaching Golf II	2
REC 305	Teaching Golf III	2
Total Hours		**~~20-24~~19-23**

[1] PGA 251 and PGA 385, together, can be used to meet the requirement for the Specialized Elective or the Marketing & Entrepreneurship Elective.

[2] ~~PGA 386 can be used to meet the Operations Management Elective requirement.~~

Courses to total ~~130~~129 credits for this degree.
In addition to all other requirements, students must take at least 9 credits from outside the CBE in addition to those specifically required. These may be chosen from the restricted electives or from other courses.

OPERATION MANAGEMENT

A. PGA Golf Management Option

Required course work includes all Operations Management requirements and:

PGA 103	Introduction to PGA Golf Management	2
PGA 150	PGA Golf Management I	~~2~~3
PGA 251	PGA Golf Management II	~~2~~3
PGA 298	Internship (Max 6 credits)	1-3
PGA 385	PGA Golf Management III [1]	~~2~~3
~~PGA 386~~	~~Food and Beverage Hospitality with Lab [2]~~	~~4~~
PGA 398	Internship (Max 6 credits) [1]	1-3
REC 105	Teaching Golf I	2
REC 205	Teaching Golf II	2
REC 305	Teaching Golf III	2
Total Hours		**~~20-24~~19-23**

[1] PGA 385~~, PGA 386,~~ or PGA 398 can be used to cover the (nine credits) of OM electives.

Courses to total ~~130~~129 credits for this degree
Students must have a 12.0 handicap or better to enter this program. International students can complete the degree requirements, but membership to the PGA of America requires US Citizenship or Resident Alien status.

5. Make the following curricular changes to the **Management Information Systems Major** (B.S.Bus.):
Required course work includes the university requirements (see regulation J-3), the college requirements, and:

College of Business & Economics Requirements	54-57
Major Requirements	24
Total Hours	78-81

Major Requirements

MIS 353	Application Development	3
MIS 355	Systems Analysis & Administration	3
MIS 452	Business Telecommunications Management	3
MIS 453	Database Design	3
MIS 454	Issues in Information Systems	3
MIS 455	Data Management for Big Data	3
~~**Select at least two additional Restricted MIS Elective courses from the following**~~**Select at least two additional Restricted MIS Elective courses from the following OR one 400 level course offered by College of Business and Economics and one course from the following**:		**6**
CS 120	Computer Science I	
CS 210	Programming Languages	
CS 240	Computer Operating Systems	
CS 270	System Software	
GEOG 385	GIS Primer	
GEOG 390	Cartographic Design & Geovisualization	
~~One 400-Level course offered by the College of Business and Economics~~		
~~One Upper-Division Computer Science Course~~		
~~Select one of the following courses:~~		~~3~~
~~CS 210~~	~~Programming Languages~~	
~~CS 240~~	~~Computer Operating Systems~~	
~~CS 270~~	~~System Software~~	
Total Hours		24

Courses to total 120 credits for this degree

A. PGA Golf Management Option *[See item 4 for curricular changes to the PGA Option]*

Code	Title	Hours
PGA 103	Introduction to PGA Golf Management	2
PGA 150	PGA Golf Management I	2
PGA 251	PGA Golf Management II [1]	2
PGA 298	Internship (Max 6 credits)	1-3
PGA 385	PGA Golf Management III [2]	2
PGA 386	Food and Beverage Hospitality with Lab [2]	4
PGA 398	Internship	1-3
REC 105	Teaching Golf I (Max 6 credits)	2
REC 205	Teaching Golf II	2
REC 305	Teaching Golf III	2
Total Hours		20-24

[1] PGA 251 and PGA 385, together, can be used to meet the requirement for the Specialized Elective or the Marketing & Entrepreneurship Elective.

[2] PGA 386 can be used to meet the Operations Management Elective requirement.

Courses to total 130 credits for this degree.
In addition to all other requirements, students must take at least 9 credits from outside the CBE in addition to those specifically **required. These may be chosen from the restricted electives or from other courses.**

College of Engineering

CIVIL AND ENVIRONMENTAL ENGINEERING

1. Make the following curricular changes to the Geological Engineering Minor:

Required Courses		**12**
ENGR 220	Engineering Dynamics	
CE 325	Fundamentals of Hydrologic Engineering	
GEOE 465	Excavation and Materials Handling	
GEOE 407	Rock Mechanics	

Elective Courses (choose 3)		**7-12**
CE 360	Fundamentals of Geotechnical Engineering	
CE 330	Fundamentals of Environmental Engineering	
CE 421	Engineering Hydrology	
CE 460	Geotechnical Engineering Design	
GEOE 428	Geostatistics	
GEOL 111	Physical Geology for Science Majors	
GEOL 111L	Physical Geology for Science Majors Lab	
GEOL 345	Structural Geology	
GEOL 422	Principles of Geophysics	
GEOL 335	Geomorphology	
GEOL 344	Earthquakes and Seismic Hazards	
GEOL 345	Structural Geology	
GEOL 309	Groundwater Geology	
GEOL 361	Geology and the Environment	
GEOL 410	Techniques of Groundwater Study	
GEOL 422	Principles of Geophysics	
HYDR 409	Quantitative Hydrogeology	
HYDR 412	Environmental Hydrology	
~~CE 360~~	~~Fundamentals of Geotechnical Engineering~~	~~4~~
~~CE 460~~	~~Geotechnical Engineering Design~~	~~3~~
~~GEOL 111~~	~~Physical Geology for Science Majors~~	~~3~~
~~GEOL 111L~~	~~Physical Geology for Science Majors Lab~~	~~1~~
~~GEOL 345~~	~~Structural Geology~~	~~4~~
~~GEOL 422~~	~~Principles of Geophysics~~	~~4~~
~~GEOE 407~~	~~Rock Mechanics~~	~~3~~
~~GEOE 436~~	~~Geological Engineering Analysis and Design~~	~~3~~
~~HYDR 409~~	~~Quantitative Hydrogeology~~	~~3~~
~~**One approved Technical Elective in the Geotechnics area**~~		~~**3**~~
Total Hours		~~**31**~~21

Courses to total ~~31~~21 credits for this minor

ENGINEERING MANAGEMENT

1. Make the following curricular changes to the **Engineering Management Major** (M.Engr.):
   General M.Engr. requirements apply. The Engineering Management degree requires 30 credits; a minimum of 15 credits must be engineering courses. The degree program includes 12 credits of

required courses (see below) and the rest are electives based on particular program requirements. Each student will design a study plan in consultation with the Engineering Management Student Advisor which is then approved by the Director. Nearly all of the Engineering Management students do not live in Moscow and are allowed to take classes from other universities, especially elective classes, as appropriate and following University of Idaho policy for transfer courses.

Exit Requirement for the EM Degree Program: All students are required to complete the exit requirement in order to earn the Master of Engineering in Engineering Management. Successfully completing the exit requirement is accomplished through one of the following options.

Option 1: Three (3) credits of qualitative elective will be satisfied by the student passing three (3) credits of EM 599 Non-thesis Masters Research and completing a non-thesis masters project following program requirements in effect at the time of registration. This option will include a presentation of the student's project to a committee, followed by a Final Defense typically based on the project and the student's coursework. Students must pass both the oral presentation and final defense. In total through this option students complete a minimum of 30 credits to earn the EM degree.

Option 2: In addition to the core 30-31 credit EM curriculum, students must pass an additional one-credit course, EM 596 Capstone Integration, following program requirements in effect at the time of registration. Option 2 requires the student to complete a minimum of 31 credits to earn the EM degree.

(2A) In completing EM596, students must pass the CPEM examination administered by the American Society for Engineering Management (ASEM) and become a Certified Professional in Engineering Management (CPEM).

(2B) Students who do not meet the work experience requirement for the CPEM exam may choose to complete a comprehensive exam, prepared and administered by EM faculty, to satisfy EM596.

Required Courses		
ACCT 582	Enterprise Accounting	3
MHR 513	Leadership and Organizational Behavior	3
EM 510	Engineering and Technology Management Fundamentals	3
STAT 431	Statistical Analysis	3
Total Hours		**12**

College of Letters, Arts and Social Sciences

AMERICAN INDIAN STUDIES

1. Add the following course:
   AIST 201 Intermediate Nez Perce I
   4 credits
   Cross-listed with NEZP 201
   Pronunciation, vocabulary, reading, spoken Nez Perce, and functional grammar.
   Prereq: AIST 102 or NEZP 102

2. Make the following curricular changes to the **American Indian Studies Minor**:

AIST/ANTH 314 /SOC 317	Tribal Sovereignty and Federal Policy	3
AIST 344	Indigenous Ways of Knowing	3
AIST/ANTH 422	Plateau Indians	3
Select 9 credits of elective courses from the following:		**9**

AIST/NEZP 101	Elementary Nez Perce I	
AIST/NEZP 102	Elementary Nez Perce II	
AIST 110	Community Building	
AIST 111	Intro to Success	
AIST/NEZP 201	Intermediate Nez Perce I	
AIST 204	Special Topics	
AIST 210	Native Identities	
AIST 298	Tribal Natural Resource Internship	
AIST/ANTH ~~244~~321 /SOC 319	Tribal Elders Series	
AIST 320	Native American & Indigenous Film	
AIST 400	Seminar	
AIST 401	Contemporary American Indian Issues	
AIST 403	Workshop	
AIST 404	Special Topics	
AIST 411	Native American Architecture	
AIST 412	Tribal Governance	
AIST 420	Native American Law	
AIST 421	Native American Natural Resource Law	
AIST 426	Red Earth White Lies: American Indian History 1840-Present	
AIST 431	Stolen Continents, The Indian Story: Indian History to 1840	
AIST 478	Tribal Nation Economics and Law	
AIST 498	Internship	
AIST 499	Directed Study	
ANTH 329	North American Indians	
ANTH 436	North American Prehistory	
ANTH 443	Plateau Prehistory	
ENGL ~~4~~384	American Indian Literature	
~~NEZP 101~~	~~Elementary Nez Perce I~~	
~~NEZP 102~~	~~Elementary Nez Perce II~~	
SOC 427	Racial and Ethnic Relations	
Total Hours		**18**

Courses to total 18 credits for this minor

MODERN LANGUAGES AND CULTURES

1. Reactivate the following course:

   NEZP 201 Intermediate Nez Perce I
   4 credits
   Cross-listed with AIST 201
   Pronunciation, vocabulary, reading, spoken Nez Perce, and functional grammar.
   Prereq: AIST 102 or NEZP 102

MUSIC

1. Create the following prefix **(see UCC-19-015-addendum)**:
   MUSI (Music)

2. Change the following course:
   ~~MUSH~~MUSI ~~101~~100 (s) ~~Survey of~~ Introduction to Music
   3 credits
   Gen Ed: Humanities
   Not open for credit to majors. Introduction to the art and nature of music; emphasis on aural skills, historical styles, musical forms, and the literature of music.

3. Make the following curricular changes to the **Music Minor:**

MUSA 114	Studio Instruction	4
MUSA 145	Piano Class for Music Majors/Minors	1
MUSA 146	Piano Class for Music Majors/Minors	1
MUSC 139	Aural Skills I	2
MUSC 140	Aural Skills II	2
MUSC 141	Theory of Music I	2
MUSC 142	Theory of Music II	2
~~MUSH 101~~MUSI 100 or MUSH 111	~~Survey of~~ Introduction to Music Introduction to Music Literature	3
MUSX 140	Recital Attendance (Two semesters required)	0
Select 4 credits of Music electives [1]		**4**
Total Hours		**21**

Courses to total 21 credits for this minor

[1] *Ensemble participation is recommended to meet the music electives requirement. Two credits of a major vocal ensemble (University Chorus or Vandaleers) are required for a music minor whose studio instruction is in voice.*

NAVAL SCIENCE

1. Change the following courses:
   NS ~~102~~303 Ships Systems I
   3 credits
   Intro to Naval shipboard engineering systems; propulsion systems; nuclear, gas turbine, and conventional; auxiliary systems and shipboard damage control; basic concepts in ship design. Cooperative: open to WSU degree-seeking students. (Fall only)

   NS ~~201~~304 Ships Systems II
   3 credits
   Naval weapons systems; theory and process of detection (radar and sonar), evaluation; weapons; delivery, guidance, and explosives; integration of weapons systems with command, control, and communications systems. Cooperative: open to WSU degree-seeking students. (Spring only).

   NS ~~202~~104 Seapower and Maritime Affairs
   3 credits

An overview of U.S. naval history; seapower and maritime affairs beginning with the Continental Navy to present-day naval history. Cooperative: open to WSU degree-seeking students. (Spring only)

NS ~~301~~205 Navigation
3 credits
Theory, principles, and procedures of terrestrial and electronic navigation, and rules of the nautical road." Cooperative: open to WSU degree-seeking students. (Spring only)

NS ~~302~~403 Naval Operations
3 credits
Naval operations and tactics, relative motion, and Maneuvering Boards. Cooperative: open to WSU degree-seeking students. (Fall only)
Prereq: NS 301.

NS ~~401~~203 Naval Leadership and Management
3 credits
Theories of management and management resources, motivational theories, and leadership. Cooperative: open to WSU degree-seeking students. (Fall only)

PSYCHOLOGY AND COMMUNICATION STUDIES

1. Add the following course:
   COMM 360 Communication Research Methods
   3 credits
   Aims and methods of quantitative and qualitative research designs used by communication scholars.
   Prereq: STAT 251 or PSYC 215

2. Change the following courses:
   COMM 347 Persuasion
   3 credits
   ~~Theory and practice of effective persuasive techniques. Recommended Preparation: COMM 101.~~
   Persuasive communication principles as they guide social interactions and persuasive dialogue.

   COMM 431 Applied Business and Professional Communication
   3 credits
   Principles, skills development, and practical applications of public communication within business and other organizational contexts; emphasis on using media for creating business presentations and on the role of effective communication in career management and civic and community development.
   Recommended Preparation: COMM 101 or COMM 150. ~~and COMM 235.~~

3. Make the following curricular changes to the **Organizational Dynamics Undergraduate Academic Certificate:**

ORGS 305	Nonprofit Organizations	3
ORGS 407	Advanced Nonprofit Organizations	3
ORGS 441 /PSYC	Human Relations in the Workplace	3
Select 3 credits from the following:		**3**

~~ORGS 210~~	~~Introduction to Organizational Sciences~~	
ORGS 320	Budgeting for Small Organizations	
ORGS 321	Workplace Motivation	
ORGS 322	Workplace Soft Skills	
ORGS 323	Messaging for Small Organizations	
Select 3~~9~~ credits from the following: [1]		~~9~~3
COMM 355	Organizational Communication	
COMM 410	Conflict Management	
COMM 456	Nonprofit Fundraising	
ORGS 414 /PSYC	Traumatic Events: Preparation, Intervention, Evaluation	
ORGS 110	Governance in Small Organizations [2]	
~~ORGS 155~~	~~Financial Literacy~~	
~~ORGS 305~~	~~Nonprofit Organizations~~	
~~PSYC 441~~	~~Human Relations in the Workplace~~	
Total Hours		~~12~~15

[1] *Three credits of COMM, ORGS, POLS, ORGS 400,* PSYC 400*,* PSYC 404*,* PSYC 494*,* PSYC 498*, or* PSYC 499 *may be substituted for one of the above courses with the approval of the Director of Organizational Sciences*

[2] ORGS 110 Governance in Small Organizations*: Reserved for leaders of student & community groups at the UI or dual enrolled.*

Courses to total ~~12~~15 credits for this certificate

SOCIOLOGY AND ANTHROPOLOGY

1. Make the following curricular changes to the **Diversity and Stratification Certificate**:

Academic Exploration Component		
SOC ~~301~~201	Introduction to Inequities and Inclusion~~Diversity and Stratification~~	3
Select 6 credits of upper-division emphasis electives from the following courses:		**6**
AIST 316 /HIST	American Indian History	
AMST 301	Studies in American Culture	
ANTH 102	Introduction to Cultural Anthropology	
	P~~eoples of the World~~	
ANTH 327	Belief Systems	
ANTH 329	North American Indians	
ANTH 412	Human Races	
ANTH 422	Plateau Indians	
ANTH 462	Human Issues in International Development	
COMM 335	Intercultural Communication	
COMM 410	Conflict Management	
COMM 432	Gender and Communication	
COMM 491	Communication and Aging	
EDCI 302	Teaching Culturally Diverse Learners	

ENGL 380	I~~ntroduction to~~ Studies in U.S. Ethnic Literatures	
ENGL 382	Studies in Queer Literature	
ENGL 383	Studies in African American Literature	
ENGL 384	Studies in American Indian Literature	
ENGL 481	Seminar in Women's Literature	
	A~~frican American Literature~~	
	A~~merican Indian Literature~~	
FCS 410	Growing Old in a New Age	
HIST 315	Comparative African-American Cultures	
HIST 420	History of Women in American Society	
	R~~ed Earth White Lies: American Indian History 1840-Present~~	
	S~~tolen Continents, The Indian Story: Indian History to 1840~~	
HIST 441	Slavery and Freedom in the Americas	
JAMM 340	Cultural Diversity and the Media	
JAMM 441	Women in the Media	
JAMM 490	Global Media	
MUSH 201	History of Rock and Roll	
MUSH 410	Studies in Jazz History	
POLS 423	Politics, Policy and Gender	
PSYC 315	Psychology of Women	
PSYC 330	Human Sexuality	
PSYC 419	Adult Development and Aging	
SOC 325	Family, Violence, and Society	
SOC 327	Sociology of the Family	
SOC 340	Social Change & Globalization	
	P~~ower, Politics, and Society~~	
SOC 421	Gender and Crime	
SOC 423	Economic (In)Justice in the United States	
SOC 424	Sociology of Gender	
SOC 427	Racial and Ethnic Relations	
SOC 431	Personal and Social Issues in Aging	
SOC 439	Inequalities in the Justice System	
WGSS 367	Topics in Women's, Gender, and Sexuality Studies	
WGSS 410	Feminist Theory and Action	
Application Component Electives		
Select 3 credits, no more than 6 credits can apply to this certificate.		3
ANTH 203	Workshop	
ANTH 403	Workshop	
SOC 203	Workshop	
SOC 403	Workshop	
Experiential Learning		
Total Hours		**12**

Courses to total 12 credits for this certificate

2. Make the following curricular changes to the **Minor in Women's, Gender, and Sexuality Studies:**

WGSS 201	Introduction to Women's, Gender, and Sexuality Studies	3
Select a minimum of three different subject prefixes from the following:		**15**
ANTH 428	Social and Political Organization	
ANTH 462	Human Issues in International Development	
COMM 432	Gender and Communication	
ENGL 382	Queer Literature	
ENGL 481	Women's Literature (May be retaken once to total 6 credits.)	
FCS 240	Intimate Relationships	
FCS 340	Parent-Child Relationships in Family and Community	
FCS 346	Personal and Family Finance and Management	
FCS 436	Theories of Child and Family Development	
FCS 440	Contemporary Family Relationships	
FCS 445	Issues in Work and Family Life	
FCS 462	Eating Disorders	
HIST 357	Women in Pre-Modern European History	
HIST 420	History of Women in American Society	
JAMM 340	Cultural Diversity and the Media	
JAMM 446	Women in the Media	
POLS 423	Politics, Policy and Gender	
PHIL 405	Feminism & Philosophy	
PSYC 315	Psychology of Women	
PSYC 320	Introduction to Social Psychology	
~~SOC 241~~	~~Global Sociology: Gender, Race, and Class Around the World~~	
~~SOC 301~~	~~Introduction to Diversity and Stratification~~	
SOC 325	Family, Violence, and Society	
SOC 327	Sociology of the Family	
SOC 340	Social Change and Globalization	
SOC 342	Gender and Science	
SOC 421	Gender and Crime	
SOC 424	Sociology of Gender	
SOC 427	Racial and Ethnic Relations	
WGSS 367	Topics in Women's, Gender, and Sexuality Studies	
WGSS 404	Special Topics	
WGSS 410	Feminist Theory and Action	
WGSS 498	Internship in Women's, Gender, and Sexuality Studies	
WGSS 499	Directed Study	
Total Hours		18

Courses to total 18 credits for this minor

With prior approval of the Women's, ~~and~~ Gender, and Sexuality Studies committee, a student may also include credit from survey courses, special topics courses, or seminars meeting the guidelines for inclusion of courses in a Women's, ~~and~~ Gender, and Sexuality Studies minor. No more than 3 credits may count toward both the student's major and minor.

UNIVERSITY HONORS PROGRAM

1. Add the following courses:

   INTR 454 Honors Thesis
   1 credit
   This University Honors Program course is designed for honors students who are actively working towards completing an honors thesis by the time they graduate from the university and the honors program with an undergraduate degree. The course is intended to assist students with the process of finding two faculty mentors who will be guiding them through thesis research and writing, completing an honors thesis proposal, learning about time management, finding writing resources, identifying and practicing research presentations, and timely completion and presentation of the honors thesis at the annual Office of Undergraduate Research (OUR) Symposium in April and the "University Honors Program Research and Creative Activity Thesis Forum" in either December or May each year.

   INTR 455 Producing 'The Looking Glass'
   1 credit
   This course offers students in the University Honors Program an opportunity to learn how to produce the program's student publication, *The Looking Glass*. The one-credit course includes developing or reviewing criteria for submissions, sending out calls for submissions from honors students, hosting submission sessions, reviewing submissions, editing submissions, and editing and publishing the final product, the annual publication *The Looking Glass*.

College of Natural Resources

ENVIRONMENTAL SCIENCE

1. Add the following course:

   ENVS 386 Social-Ecological Systems
   3 credits
   Cross-listed with NRS 386
   Social-ecological systems are comprised of interconnected social, economic, and environmental components. Explore social-ecological systems frameworks and fundamental principles of sustainability in 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 475 Local & Regional Environmental Planning
   3 credits
   Cross-listed with NRS 475
   This course focuses on environmental planning by governments, nonprofit organizations, and collaborative partnerships at the local and regional level. Students will study a variety of planning approaches, such as community visioning and policy and management tools. Topics will include planning for public health, natural areas, working landscapes, and the built environment.
   Prereq: Junior or Senior standing or permission

2. Make the following curricular changes to the **Major in Environmental Science (B.S.Env.S.):**
   Required course work includes the university requirements (see regulation J-3), the general requirements for the B.S. degree, and:

   ~~BIOL 115 Cells & the Evolution of Life 3~~

BIO 114	Organisms and Environments	4
~~BIOL 115L~~	~~Cells and the Evolution of Life Laboratory~~	~~1~~
~~CHEM 111~~	~~Principles of Chemistry I~~ [1]	~~3~~
~~CHEM 111L~~	~~Principles of Chemistry I Laboratory~~	~~1~~
COMM 101 OR COMM 233	Fundamentals of Public Speaking (OR one semester of a foreign language course) Interpersonal Communication	2-4 3
ENVS 101	Introduction to Environmental Science	3
ENVS 102	Field Activities in Environmental Sciences	1
ENVS 225	International Environmental Issues Seminar	3
ENVS 400	Seminar	1-16
ENVS 497	Senior Research (4 cr, 2 cr each semester of SR YR)	4
ENGL 316	Environmental Writing	3
OR ENGL 317 OR ENGL 318	Technical Writing Science Writing	3 3
PHIL 452	Environmental Philosophy	3
STAT 251 or STAT 301	Statistical Methods Probability and Statistics	3
GEOG 100 & GEOG 100L OR GEOL 101 & GEOL 101L OR GEOL 111 & GEOL 111L OR SOIL 205 &SOIL 206	Physical Geography Physical Geography Lab Physical Geology Physical Geology Lab Physical Geology for Science Majors Physical Geology for Science Majors Lab The Soil Ecosystem The Soil Ecosystem Lab	3 1 3 3 3 1 3 1
Ecology 1 course from the following:		
BIOL 314	Ecology and Population Biology	4
FOR/REM 221	Principles of Ecology	3
OR WLF 220	Principles of Ecology	3
GEOG 410	Biogeography	3
NR 321	Ecology	3
Environmental Policy and Regulations 1 course from the following: 3		
AIST 314	Tribal Sovereignty and Federal Policy	3
AIST 421	Native American Natural Resource Law	
ENVS 477	Law, Ethics, and the Environment	3
ENVS 479	Intro to Environmental Regulations	
IS 322	International Environmental Organizations	
NRS 311	Public Involvement in Natural Resource Management	
NRS/POLS	Politics of the Environment	

NRS/POLS Natural Resource

Human Dimensions – 1 course from the following: 3-4

AGEC 451 Applied Env. and Natural Resource Economics
AIST 344 Indigenous Ways of Knowing
SOC/ANTH 465 Environment Policy and Justice
HIST 424 American Environmental History
ECON 272 Foundations of Economic Analysis
GEOG 345 Global Economic Geography
NRS/FOR 235 Society and Natural Resources
NRS 383 Natural Resource and Ecosystem Service Economics
SOC 350 Food, Culture, and Society

Water 1 course from the following: 3-4

ASM 315 Irrigation Systems and Water Management
BE 453 Northwest Climate and Water Resource Change
ENVS/SOIL 450 Environmental Hydrology
ENVS 446 Drinking Water and Human Health
FISH 415 Limnology
FOR 462 Watershed Science and Management
GEOL 309 Ground Water Hydrology

Sustainability and Integration 1 course from the following: 3

ENVS 415 Environmental Lifecycle Assessment
ENVS 428 Pollution Prevention
ENVS 484 History of Energy
ENVS 485 Energy Efficiency and Conservation
FS 436 Principles of Sustainability
GEOG 435 Climate Change Mitigation
ENVS 386 Social-Ecological Systems
REM 456 Integrated Rangeland Management

Technical 3 courses from the following: 1-16

BIOL 115 Cells and the Evolution of Life
BIO 250 General Microbiology
BIOL 483 Mammalogy
BIOL 489 Herpetology
CHEM 253 and 254 Quantitative Analysis and Lab
CHEM 275 Carbon Compounds
CHEM 277 Organic Chemistry
ENVS 498 Internship *sub-note: *only allowed once*
FOR/NRS 375 Intro to Spatial Analysis for NR Management
OR GEOG 385 GIS Primer
FOR/NRS 472 Remote Sensing of the Environment
GEOG 301 Meteorology
GEOG 313 Global Climate Change
GEOG 401 Climatology
GEOG 483 Remote Sensing/GIS Integration
GEOL 361 Geology and the Environment
MATH 175 Analytic Geometry and Calculus

PHYS 111	General Physics I
PHYS 111L	General Physics I Lab
PHYS 112	General Physics II
PHYS 112L	General Physics II Lab
PHYS 211	Engineering Physics I
PHYS 211L	Engineering Physics I Lab
PHYS 212	Engineering Physics II
PHYS 212L	Engineering Physics II Lab
SOIL 205	Soil Ecosystem
WLF 482	Ornithology
*for Phys. 2 Science Option only:	
ENVS 428	Pollution Prevention
ENVS 429	Environmental Audit
GEOL 375	Geology of National Parks
REM 407	GIS Application in Fire Ecology and Management
REM 459	Rangeland Ecology

Options	
Select one of the following options:	**63-68**
Biological Science	
Physical Science	
Physical Science 2	
Social Science	
Biophysical Science	
Total Hours	**87-109**

[1] Students in Social Science option may substitute CHEM 101 & CHEM 101L.

A. Biological Science Option

This option is suitable for students wishing to pursue technically oriented careers in environmental professions such as natural resource management, bioremediation, and environmental impact analysis.

~~ENVS 497~~	~~Senior Research~~	~~4~~
BIOL 250	General Microbiology	3
CHEM 112	Principles of Chemistry II	4
CHEM 112L	Principles of Chemistry II Laboratory	1
~~ENGL 317~~	~~Technical Writing~~	~~3~~
MATH 160 or MATH 170	Survey of Calculus Analytic Geometry and Calculus I	4
~~Select one of the following:~~		~~4~~
~~GEOG 100 & 100L~~	~~Physical Geography and Physical Geography Lab~~	
~~GEOL 101 & 101L~~	~~Physical Geology and Physical Geology Lab~~	
~~Select 24 credits of Advisor-directed breadth electives, including at least one course from the first four areas and 9 credits from the technical area:~~		~~24~~
~~***Ecology:***~~		
~~BIOL 314~~	~~Ecology and Population Biology~~	
~~FOR 221~~	~~Principles of Ecology~~	

~~GEOG 410~~	~~Biogeography~~
~~REM 221~~	~~Principles of Ecology~~
~~***Natural Resource Economics and Sociology:***~~	
~~AGEC 451~~	~~Applied Environmental and Natural Resource Economics~~
~~NRS 383~~	~~Natural Resource and Ecosystem Service Economics~~
~~ECON 385~~	~~Environmental Economics~~
~~FOR 235~~	~~Society and Natural Resources~~
~~***Management:***~~	
~~OM 378~~	~~Project Management~~
~~NRS 311~~	~~Public Involvement in Natural Resource Management~~
~~ENVS 428~~	~~Pollution Prevention~~
~~FOR 484~~	~~Forest Policy and Administration~~
~~GEOG 411~~	~~Natural Hazards and Society~~
~~***History, Philosophy, and Political Science:***~~	
~~AGEC 477~~	~~Law, Ethics and the Environment~~
~~ENVS 484~~	~~History of Energy~~
~~HIST 424~~	~~American Environmental History~~
~~PHIL 351~~	~~Philosophy of Science~~
~~POLS 364~~	~~Politics of the Environment~~
~~***Technical:***~~	
~~CHEM 253~~ ~~& CHEM 254~~	~~Quantitative Analysis~~ ~~and Quantitative Analysis: Lab~~
~~CHEM 275~~	~~Carbon Compounds~~ ~~[1]~~
~~CHEM 277~~	~~Organic Chemistry I~~ ~~[1]~~
~~ENVS 498~~	~~Internship~~
~~FOR 472~~	~~Remote Sensing of the Environment~~
~~GEOG 301~~	~~Meteorology~~
~~GEOG 313~~	~~Global Climate Change~~
~~GEOG 401~~	~~Climatology~~
~~GEOG 385~~	~~GIS Primer~~
~~GEOL 309~~	~~Ground Water Hydrology~~
~~GEOL 361~~	~~Geology and the Environment~~
~~MATH 175~~	~~Analytic Geometry and Calculus II~~
~~PHYS 111~~ ~~& 111L~~	~~General Physics I~~ ~~and General Physics I Lab~~ ~~[2]~~
~~PHYS 211~~ ~~& 211L~~	~~Engineering Physics I~~ ~~and Laboratory Physics I~~ ~~[2]~~
~~PHYS 112~~ ~~& 112L~~	~~General Physics II~~ ~~and General Physics II Lab~~ ~~[3]~~
~~PHYS 212~~ ~~& 212L~~	~~Engineering Physics II~~ ~~and Laboratory Physics II~~ ~~[3]~~
~~SOIL 205~~	~~The Soil Ecosystem~~
Select 4 ~~Advisor-approved depth~~ electives ~~in any area unless otherwise noted~~ from at least two of the following areas:	**20**

Plant Protection:	
ENT 322	General and Applied Entomology
PLSC 338	Weed Control
PLSC 410	Invasive Plant Biology
PLP 415	Plant Pathology
SOIL 446	Soil Fertility
Animal Ecology:	
WLF 314	Ecology of Terrestrial Vertebrates
WLF 315	Techniques Laboratory
WLF 440	Conservation Biology [4]
WLF 448	Fish and Wildlife Population Ecology [4]
Aquatic Ecology (Take all three courses):	
FISH 314	Fish Ecology
FISH 415	Limnology
FISH 430	Riparian Ecology and Management
Forest and Range Systems:	
FOR 330	Forest Soil and Canopy Processes
FOR 426	Global Fire Ecology and Management
REM 411	Ecological Monitoring and Analysis
REM 429	Landscape Ecology
REM 440	Wildland Restoration Ecology
REM 459	Rangeland Ecology
Soils:	
FS 409	Principles of Environmental Toxicology
SOIL 425	Microbial Ecology
SOIL 438	Pesticides in the Environment
SOIL 454	Pedology
Water:	
ENVS 450	Environmental Hydrology
ENVS 446	Drinking Water and Human Health
FOR 462	Watershed Science and Management
GEOL 309	Ground Water Hydrology
GEOL 410	Techniques of Groundwater Study
HYDR 412	Environmental Hydrogeology
Geospatial Tools (take at least 3 of the 6 courses listed below):	
FOR 472	Remote Sensing of the Environment
GEOG 385	GIS Primer
GEOG 424	Hydrologic Applications of GIS and Remote Sensing
GEOG 475	Intermediate GIS
GEOG 483	Remote Sensing/GIS Integration
LARC 495	GIS Applications in Land Planning 2
Climate Change and Ecosystems (Take all three courses):	
NRS 383	Natural Resource and Ecosystem Service Economics
GEOG 313	Global Climate Change

GEOG 410	Biogeography	
Total Hours		**67**

Course List

Courses to total 120 credits for this degree

[1] Either CHEM 275 or CHEM 277 may be used as a technical breadth elective.

[2] Either PHYS 111/PHYS 111L or PHYS 211/PHYS 211L may be used as a technical breadth elective.

[3] Either PHYS 112/PHYS 112L or PHYS 212/PHYS 212L may be used as a technical breadth elective.

[4] *Either* WLF 440 *or* WLF 448 *may be used as a depth elective.*

B. Physical Science Option

This option is suitable for students wishing to pursue technical careers in environmental professions such as air, soil, and water pollution abatement, hazardous waste management, waste minimization, and ecological restoration.

Code	Title	Hours
~~ENVS 497~~	~~Senior Research~~	~~4~~
~~CHEM 112~~	~~Principles of Chemistry II~~	~~4~~
~~CHEM 112L~~	~~Principles of Chemistry II Laboratory~~	~~1~~
~~ENGL 317~~	~~Technical Writing~~	~~3~~
~~MATH 170~~	~~Analytic Geometry and Calculus I~~	~~4~~
~~PHYS 111~~	~~General Physics I~~	~~3~~
~~PHYS 111L~~	~~General Physics I Lab~~	~~1~~
~~Select one of the following:~~		~~4~~
~~GEOG 100 & 100L~~	~~Physical Geography and Physical Geography Lab~~	
~~GEOL 101 & 101L~~	~~Physical Geology and Physical Geology Lab~~	
~~Select Advisor-Directed breadth electives, including at least one course from the first four areas and 9 credits from the technical area:~~		24
~~***Ecology:***~~		
~~BIOL 314~~	~~Ecology and Population Biology~~	
~~FOR 221~~	~~Principles of Ecology~~	
~~GEOG 410~~	~~Biogeography~~	
~~REM 221~~	~~Principles of Ecology~~	
~~***Natural Resource Economics and Sociology:***~~		
~~AGEC 451~~	~~Applied Environmental and Natural Resource Economics~~	
~~NRS 383~~	~~Natural Resource and Ecosystem Service Economics~~	
~~ECON 385~~	~~Environmental Economics~~	
~~FOR 235~~	~~Society and Natural Resources~~	
~~***Management:***~~		
~~OM 378~~	~~Project Management~~	
~~NRS 311~~	~~Public Involvement in Natural Resource Management~~	
~~ENVS 428~~	~~Pollution Prevention~~	
~~FOR 484~~	~~Forest Policy and Administration~~	

Code	Title	Hours
~~GEOG 411~~	~~Natural Hazards and Society~~	
~~REM 456~~	~~Integrated Rangeland Management~~	
~~***History, Philosophy, and Political Science:***~~		
~~AGEC 477~~	~~Law, Ethics and the Environment~~	
~~HIST 424~~	~~American Environmental History~~	
~~PHIL 351~~	~~Philosophy of Science~~	
~~POLS 364~~	~~Politics of the Environment~~	
~~***Technical:***~~		
~~CHEM 253~~ ~~& CHEM 254~~	~~Quantitative Analysis~~ ~~and Quantitative Analysis: Lab~~	
~~CHEM 275~~	~~Carbon Compounds~~ ~~[1]~~	
~~CHEM 277~~	~~Organic Chemistry I~~ ~~[1]~~	
~~ENVS 498~~	~~Internship~~	
~~FOR 472~~	~~Remote Sensing of the Environment~~	
~~GEOG 301~~	~~Meteorology~~	
~~GEOG 313~~	~~Global Climate Change~~	
~~GEOG 401~~	~~Climatology~~	
~~GEOG 385~~	~~GIS Primer~~	
~~GEOL 309~~	~~Ground Water Hydrology~~	
~~GEOL 361~~	~~Geology and the Environment~~	
~~MATH 175~~	~~Analytic Geometry and Calculus II~~	
~~PHYS 211~~ ~~& 211L~~	~~Engineering Physics I~~ ~~and Laboratory Physics I~~	
~~PHYS 112~~ ~~& 112L~~	~~General Physics II~~ ~~and General Physics II Lab~~ ~~[2]~~	
~~PHYS 212~~ ~~& 212L~~	~~Engineering Physics II~~ ~~and Laboratory Physics II~~ ~~[2]~~	
~~SOIL 205~~	~~The Soil Ecosystem~~	
Select 4 ~~Advisor-approved depth~~ electives ~~in any area unless otherwise noted~~ from at least two of the following areas:		20
Water:		
ENVS 446	Drinking Water and Human Health	
ENVS 450	Environmental Hydrology	
FOR 462	Watershed Science and Management	
GEOL 309	Ground Water Hydrology	
GEOL 410	Techniques of Groundwater Study	
HYDR 412	Environmental Hydrogeology	
Hazardous Waste:		
BE 433	Bioremediation	
BE 452	Environmental Water Quality	
BIOL 380	Biochemistry I	
CHEM 418	Environmental Chemistry	
ENVS 479	Introduction to Environmental Regulations	

Code	Title	Hours
FS 409	Principles of Environmental Toxicology	
Geology:		
GEOL 335	Geomorphology	
GEOL 361	Geology and the Environment	
GEOL 422	Principles of Geophysics	
GEOL 423	Principles of Geochemistry	
Mathematics and Statistics:		
MATH 175	Analytic Geometry and Calculus II	
MATH 275	Analytic Geometry and Calculus III	
MATH 310	Ordinary Differential Equations	
STAT 431	Statistical Analysis	
Soils:		
CHEM 418	Environmental Chemistry	
SOIL 415	Soil and Environmental Physics	
SOIL 422	Environmental Soil Chemistry	
SOIL 454	Pedology	
Economics and Management (take all three courses):		
OM 378	Project Management	
ECON 385	Environmental Economics	
ENVS 428	Pollution Prevention	
Geospatial Tools (take at least 3 of the 4 courses):		
FOR 472	Remote Sensing of the Environment	
GEOG 385	GIS Primer	
GEOG 424	Hydrologic Applications of GIS and Remote Sensing	
GEOG 483	Remote Sensing/GIS Integration	
Climate Change and Emissions Reduction:		
ENVS 485	Energy Efficiency and Conservation	
GEOG 313	Global Climate Change	
GEOG 401	Climatology	
GEOG 435	Climate Change Mitigation	
Total Hours		**68**

Course List

Courses to total 120 credits for this degree

[1] Either CHEM 275 or CHEM 277 may be used as a technical breadth elective.

[2] PHYS 112/PHYS 112L or PHYS 212/PHYS 212L may be used as a technical breadth elective.

C. Physical Science 2 Option

This option is only available to students in Coeur d'Alene and Idaho Falls.

~~ENVS 497~~	~~Senior Research~~	~~3~~
~~CHEM 112~~	~~Principles of Chemistry II~~	~~4~~
~~CHEM 112L~~	~~Principles of Chemistry II Laboratory~~	~~1~~
~~ENGL 317~~	~~Technical Writing~~	~~3~~
~~PHYS 111~~	~~General Physics I~~	~~3~~

~~PHYS 111L~~	~~General Physics I Lab~~	~~1~~
~~MATH 160~~ ~~or MATH 170~~	~~Survey of Calculus~~ ~~Analytic Geometry and Calculus I~~	~~4~~
~~Select one of the following:~~		~~4~~
~~GEOG 100~~ ~~& 100L~~	~~Physical Geography~~ ~~and Physical Geography Lab~~	
~~GEOL 101~~ ~~& 101L~~	~~Physical Geology~~ ~~and Physical Geology Lab~~	
~~Select Advisor-Directed breadth electives, including at least one course from the first four areas and 9 credits from the technical area:~~		24
~~***Ecology:***~~		
~~BIOL 314~~	~~Ecology and Population Biology~~	
~~FOR 221~~	~~Principles of Ecology~~	
~~REM 221~~	~~Principles of Ecology~~	
~~***Natural Resource Economics and Sociology:***~~		
~~ECON 201~~	~~Principles of Macroeconomics~~	
~~ECON 202~~	~~Principles of Microeconomics~~	
~~ECON 272~~	~~Foundations of Economic Analysis~~	
~~INDT 415~~	~~Impact of Technology on Society~~	
~~***Management:***~~		
~~ENVS 436~~	~~Principles of Sustainability~~	
~~ENVS 479~~	~~Introduction to Environmental Regulations~~	
~~FOR 426~~	~~Global Fire Ecology and Management~~	
~~GEOG 424~~	~~Hydrologic Applications of GIS and Remote Sensing~~	
~~***History, Philosophy, and Political Science:***~~		
~~ENVS 484~~	~~History of Energy~~	
~~HIST 461~~	~~Idaho and the Pacific Northwest~~	
~~POLS 364~~	~~Politics of the Environment~~	
~~***Technical:***~~		
~~BIOL 114~~	~~Organisms and Environments~~	
~~CHEM 253~~ ~~& CHEM 254~~	~~Quantitative Analysis~~ ~~and Quantitative Analysis: Lab~~	
~~CHEM 275~~	~~Carbon Compounds~~	
~~CHEM 277~~	~~Organic Chemistry I~~	
~~ENVS 428~~	~~Pollution Prevention~~	
~~ENVS 429~~	~~Environmental Audit~~	
~~ENVS 498~~	~~Internship~~	
~~GEOG 385~~	~~GIS Primer~~	
~~GEOL 309~~	~~Ground Water Hydrology~~	
~~GEOL 375~~	~~Geology of National Parks~~	
~~MATH 175~~	~~Analytic Geometry and Calculus II~~	
~~PHYS 112~~ ~~& 112L~~	~~General Physics II~~ ~~and General Physics II Lab~~ ~~[1]~~	
~~PHYS 212~~	~~Engineering Physics II~~	

~~& 212L~~	~~and Laboratory Physics II~~ [1]	
~~REM 407~~	~~GIS Application in Fire Ecology and Management~~	
~~REM 440~~	~~Wildland Restoration Ecology~~	
~~REM 459~~	~~Rangeland Ecology~~	
~~SOIL 205~~	~~The Soil Ecosystem~~	
Select 4 ~~Advisor-approved depth~~ electives ~~in any area unless otherwise noted~~ from at least two of the following areas:		**20**
Water:		
CE 433	Water Quality Management	
ENVS 450	Environmental Hydrology	
FISH 540	Wetland Restoration	
GEOL 309	Ground Water Hydrology	
HYDR 414	Ground Water-Surface Water Interactions	
Mathematics and Statistics:		
MATH 175	Analytic Geometry and Calculus II	
MATH 275	Analytic Geometry and Calculus III	
MATH 310	Ordinary Differential Equations	
STAT 431	Statistical Analysis	
Management Tools (take three of the following):		
ENVS 415	Environmental Lifecycle Assessment	
ENVS 428	Pollution Prevention	
GEOG 385	GIS Primer	
GEOG 475	Intermediate GIS	
GEOG 424	Hydrologic Applications of GIS and Remote Sensing	
INDT 364	Hazardous Materials	
INDT 448	Project and Program Management	
Environmental Policy and Regulations (Take three of the following):		
NRS 572	Human Dimensions of Restoration Ecology	
ENVS 429	Environmental Audit	
ENVS 436	Principles of Sustainability	
ENVS 479	Introduction to Environmental Regulations	
ENVS 482	Natural Resource Policy and Law	
Energy Systems:		
GEOG 453	Water and Energy Systems	
ENVS 484	History of Energy	
ENVS 485	Energy Efficiency and Conservation	
INDT 415	Impact of Technology on Society	
INDT 434	Power Generation and Distribution	
Sustainability Science:		
ENVS 415	Environmental Lifecycle Assessment	
ENVS 428	Pollution Prevention	
ENVS 436	Principles of Sustainability	
FS 409	Principles of Environmental Toxicology	
INDT 457	Lean to Green Sustainable Technology	

Total Hours		**67**

Course List

Courses to total 120 credits for this degree

[1] Either PHYS 112 / PHYS 112L or PHYS 212 / PHYS 212L may be used as a technical breadth elective.

D. Social Science Option

This option is suitable for students wishing to pursue careers in environmental professions such as environmental regulation, land use planning, environmental administration, and as a pre-law program for environmental law.

ENGL 309	Rhetorical Style	3
OR ENGL 202	Introduction to Professional Writing	3
OR PHIL 201	Critical Thinking	3
~~or JAMM 428~~	~~Environmental Journalism~~	
SOC/ANTH 309	Social Science Methods 3	
OR NRS 310	Social Science Methods 4	
~~ENGL 316~~	~~Environmental Writing~~	~~3~~
~~or ENGL 317~~	~~Technical Writing~~	
~~ENVS 497~~	~~Senior Research~~	~~4~~
~~GEOG 100~~	~~Physical Geography~~	~~3~~
~~GEOG 100L~~	~~Physical Geography Lab~~	~~1~~
~~GEOL 101~~	~~Physical Geology~~	~~3~~
~~GEOL 101L~~	~~Physical Geology Lab~~	~~1~~
MATH 143	Pre-calculus Algebra and Analytic Geometry	3
~~PHIL 201~~	~~Critical Thinking~~	~~3~~
~~or POLS 235~~	~~Political Research Methods and Approaches~~	
~~Select Advisor-Directed breadth electives, including at least one course from the first four areas and 9 credits from the technical area:~~		24
~~***Ecology:***~~		
~~BIOL 314~~	~~Ecology and Population Biology~~	
~~FOR 221~~	~~Principles of Ecology~~	
~~GEOG 410~~	~~Biogeography~~	
~~REM 221~~	~~Principles of Ecology~~	
~~***Natural Resource Economics and Sociology:***~~		
~~AGEC 451~~	~~Applied Environmental and Natural Resource Economics~~	
~~NRS 383~~	~~Natural Resource and Ecosystem Service Economics~~	
~~ENVS 428~~	~~Pollution Prevention~~	
~~ECON 385~~	~~Environmental Economics~~	
~~FOR 235~~	~~Society and Natural Resources~~	
~~***Management:***~~		
~~OM 378~~	~~Project Management~~	
~~NRS 311~~	~~Public Involvement in Natural Resource Management~~	
~~FOR 484~~	~~Forest Policy and Administration~~	
~~GEOG 411~~	~~Natural Hazards and Society~~	
~~REM 456~~	~~Integrated Rangeland Management~~	
~~***History, Philosophy, and Political Science:***~~		

~~AGEC 477~~	~~Law, Ethics and the Environment~~	
~~ENVS 484~~	~~History of Energy~~	
~~HIST 424~~	~~American Environmental History~~	
~~PHIL 351~~	~~Philosophy of Science~~	
~~POLS 364~~	~~Politics of the Environment~~	
~~***Technical:***~~		
~~CHEM 253~~ ~~& CHEM 254~~	~~Quantitative Analysis~~ ~~and Quantitative Analysis: Lab~~	
~~CHEM 275~~	~~Carbon Compounds~~ [1]	
~~CHEM 277~~	~~Organic Chemistry I~~ [1]	
~~ENVS 498~~	~~Internship~~	
~~FOR 472~~	~~Remote Sensing of the Environment~~	
~~GEOG 301~~	~~Meteorology~~ [2]	
~~GEOG 313~~	~~Global Climate Change~~ [2]	
~~GEOG 401~~	~~Climatology~~	
~~GEOG 385~~	~~GIS Primer~~	
~~GEOL 309~~	~~Ground Water Hydrology~~	
~~GEOL 361~~	~~Geology and the Environment~~	
~~MATH 175~~	~~Analytic Geometry and Calculus II~~	
~~PHYS 111~~ ~~& 111L~~	~~General Physics I~~ ~~and General Physics I Lab~~ [3]	
~~PHYS 211~~ ~~& 211L~~	~~Engineering Physics I~~ ~~and Laboratory Physics I~~ [3]	
~~PHYS 112~~ ~~& 112L~~	~~General Physics II~~ ~~and General Physics II Lab~~ [4]	
~~PHYS 212~~ ~~& 212L~~	~~Engineering Physics II~~ ~~and Laboratory Physics II~~ [4]	
~~SOIL 205~~	~~The Soil Ecosystem~~	
Select 5 ~~Advisor-approved~~ depth electives from one of the following areas:		**15**
Policy and Law:		
ENVS 479	Introduction to Environmental Regulations	
PHIL 470	Philosophy of Law	
POLS 364	Politics of the Environment	
POLS 467	Constitutional Law	
POLS 468	Civil Liberties	
Administration and Planning:		
ACCT 482	Enterprise Accounting	
COMM 410	Conflict Management	
NRS 386	Social-Ecological Systems	
NRS 387	Environmental Communication Skills	
~~ECON 385~~	~~Environmental Economics~~	
FOR/NRS 484	Forest Policy and Administration	
GEOG 330	Urban Geography	
POLS 364	Politics of the Environment	

POLS 451	Public Administration	
POLS 454	Public Organization Theory	
POLS 462	Natural Resource Policy	
PSYC 416	Industrial/Organizational Psychology	
NRS 475	Local and Regional Environmental Planning	
Green Building and Community Design:		
ARCH 151	Introduction to the Built Environment	
ARCH 266	Materials and Methods	
ARCH 463	Environmental Control Systems I	
ARCH 464	Environmental Control Systems II	
GEOG 435	Climate Change Mitigation	
GEOG 486	Transportation, GIS & Planning	
LARC 380	Water Conservation Technologies	
LARC 480	The Resilient Landscape	
Climate Change - Human Dimensions:		
ECON 385	Environmental Economics	
ENVS 479	Introduction to Environmental Regulations	
ENVS 484	History of Energy	
ENVS 485	Energy Efficiency and Conservation	
GEOG 313	Global Climate Change	
GEOG 435	Climate Change Mitigation	
GEOG 455	Societal Resilience and Adaptation to Climate Change	
NRS 383	Natural Resource and Ecosystem Service Economics	
GEOG 411	Natural Hazards and Society	
Total Hours		**63**

Courses to total 120 credits for this degree

[1] Either CHEM 275 or CHEM 277 may be used as a technical breadth elective.

[2] Either GEOG 301 or GEOG 401 may be used as a technical breadth elective.

[3] Either PHYS 111 / PHYS 111L or PHYS 211 / PHYS 211L may be used as a technical breadth elective.

[4] Either PHYS 112 / PHYS 112L or PHYS 212 / PHYS 212L may be used as a technical breadth elective.

E. Biophysical Science Option

This option is intended for students at a distance wishing to pursue technically oriented careers in environmental professions such as natural resource management, bioremediation, and environmental impact analysis. Students need to work closely with an academic advisor to plan the courses needed to fulfill degree requirements which are not available through distance delivery.

BIOL 250 or PHYS 111	General Microbiology General Physics I	3
ENGL 317	Technical Writing	3
ENVS 497	Senior Research	2-4
MATH 170	Analytic Geometry and Calculus I	4
Select one of the following:		**4**
GEOG 100	Physical Geography	

& 100L	and Physical Geography Lab	
GEOL 101	Physical Geology	
& 101L	and Physical Geology Lab	
Select 48 credits of ~~Advisor-directed breadth~~ electives, including at least one course from each of the following ~~depth~~ areas (all are available online):		48
Water and Soils:		
BE 452	Environmental Water Quality	
ENVS 446	Drinking Water and Human Health	
ENVS 450	Environmental Hydrology	
SOIL 205	The Soil Ecosystem	
SOIL 438	Pesticides in the Environment	
SOIL 446	Soil Fertility	
Sustainability:		
ENVS 428	Pollution Prevention	
FCS 411	Global Nutrition	
FS 409	Principles of Environmental Toxicology	
FS 436	Principles of Sustainability	
GEOG 313	Global Climate Change	
INDT 415	Impact of Technology on Society	
Ecology:		
FOR 426	Global Fire Ecology and Management	
REM 221	Principles of Ecology	
REM 410	Principles of Vegetation Monitoring and Measurement	
REM 440	Wildland Restoration Ecology	
REM 459	Rangeland Ecology	
WLF 440	Conservation Biology	
Energy:		
ENVS 484	History of Energy	
ENVS 485	Energy Efficiency and Conservation	
Geographical Information Systems:		
GEOG 385	GIS Primer	
GEOG 424	Hydrologic Applications of GIS and Remote Sensing	
REM 407	GIS Application in Fire Ecology and Management	
Social Science:		
IS 322	International Environmental Organizations	
ENVS 428	Pollution Prevention	
ENVS 484	History of Energy	
FCS 411	Global Nutrition	
INDT 415	Impact of Technology on Society	
Total Hours		**64-66**

Courses to total 120 credits for this degree.

FISH AND WILDLIFE SCIENCES

1. Add the following courses:

FISH 411 Fish Physiology
2 credits
Joint-listed with FISH 511
Physiology of fishes, their implications, and applications. Principles and methods used to study organ systems and physiological mechanisms of homeostatic regulation in fishes.
Prereq or Coreq: FISH 481

FISH 450 Ecology and Conservation of Freshwater Invertebrates
2 credits
Joint-listed with FISH 550
The course will survey the evolutionary origins and identification of major groups of invertebrates occurring in freshwaters, examine the key behavioral, morphological, and physiological traits possessed by freshwater invertebrates, identify the key ecological roles and influence of invertebrates in freshwater ecosystems and ecosystem services, and demonstrate how freshwater invertebrates can be used to monitor water quality and ecosystem condition. Cooperative: open to WSU degree-seeking students. (Spring Alt/yrs)
Prereq: BIOL 114 or ENT 322 or Permission.

FISH 550 Ecology and Conservation of Freshwater Invertebrates
2 credits
Joint-listed with FISH 450
The course will survey the evolutionary origins and identification of major groups of invertebrates occurring in freshwaters, examine the key behavioral, morphological, and physiological traits possessed by freshwater invertebrates, identify the key ecological roles and influence of invertebrates in freshwater ecosystems and ecosystem services, and demonstrate how freshwater invertebrates can be used to monitor water quality and ecosystem condition. Cooperative: open to WSU degree-seeking students. (Spring Alt/yrs)

FISH 451 Freshwater Invertebrate Field Methods
2 credits
Joint-listed with FISH 551
The course will survey the systematics and identification of freshwater invertebrates and demonstrate how freshwater invertebrates can be used to monitor water quality and ecosystem condition. Students will collect and identify freshwater invertebrates from habitats surrounding Moscow, Idaho during an intensive field course. The course will occur on one weekend in February and five days of Spring Break. The course has two required field trips. Cooperative: open to WSU degree-seeking students. (Spring Alt/yrs)
Prereq: Biol 114 or ENT 322 or Permission.
Coreq: FISH 450

FISH 551 Freshwater Invertebrate Field Methods
2 credits
Joint-listed with FISH 451
The course will survey the systematics and identification of freshwater invertebrates and demonstrate how freshwater invertebrates can be used to monitor water quality and ecosystem condition. Students

will collect and identify freshwater invertebrates from habitats surrounding Moscow, Idaho during an intensive field course. The course will occur on one weekend in February and five days of Spring Break. The course has two required field trips. Cooperative: open to WSU degree-seeking students. (Spring Alt/yrs)
Prereq: Biol 114 or ENT 322 or Permission.
Coreq: FISH 450

FISH 526 Climate Change and Ecosystem Management
2 credits
Climate change and the conservation and management of populations and ecosystems.
This graduate seminar will examine the current understanding of climate controls on ecosystems, likely scenarios for climate change in coming years, effects on fish and wildlife communities and populations, and policy discussions as they relate to conservation and management using analysis of primary literature, and oral and written assignments.
Cooperative: open to WSU degree-seeking students. (Fall Alt/yrs)
Prereq: Previous coursework in ecology or Permission.

WLF 411 Wildland Habitat Ecology and Assessment
2 credits
Cross-listed with REM 411
This course integrates field sampling with quantitative and theoretical concepts related to scientific research, wildlife habitat, and land management practices. Students collect, analyze, and report on ecological data in various formats, and learn specific protocols used by professionals to assess wildlife habitat. Class field trips required. Recommended preparation: REM 252 and REM 253, REM 341, or other plant identification class; ability to use excel. Co-enrollment in REM 410 is recommended.
Prereq: STAT 251 or Permission.

WLF 550 Applied Mixed Effects Modeling
2 credits
Analysis of complex ecological data with mixed effects models and their various extensions. After a brief review of generalized linear modeling, students will gain practical experience in the use of linear and generalized linear mixed models to analyze hierarchical datasets (continuous, count, binary, etc.) that include inherent serial or spatial autocorrelation. Cooperative: open to WSU degree-seeking students. (Fall, Alt/yrs)
Prereq: STAT 431

WLF 550 Quantitative Analysis of Fish and Wildlife Populations
2 credits
Contemporary mathematical and statistical models central to fish and wildlife research and management, including capture-recapture, occupancy, resource selection, movement, population growth, hierarchical models.
Prereq: MATH 160 or equivalent, STAT 431

2. Change the following courses:
   FISH 315 Fish Ecology ~~Lab~~ Field Techniques and Methods
   ~~1~~2 credits

Laboratory and field experience in fish ecology with emphasis on field techniques, laboratory experimentation, and habitat assessment. One weekend field trip and several day trips required. (Fall only)
Prereq: FOR 221, REM 221, NR 321, or BIOL 314
~~**Coreq:** FISH 314~~

FISH 481 Ichthyology
4 credits
Anatomy, ~~taxonomy~~systematics, physiology, behavior, genetics and zoogeography of fishes. Three lectures and one 3-hr lab per week. (Spring only). Course has 2 required field trips.
Prereq: BIOL 114 and BIOL 115, and BIOL 213 or instructor permission

FISH 511 Fish Physiology
2 credits
Joint-listed with FISH 411
~~Principles and methods used to study vital organs, organ systems, growth, and reproduction of fishes; emphasis on osmoregulation, metabolism, endocrinology, and respiration.~~ Physiology of fishes, their implications, and applications. Principles and methods used to study organ systems and physiological mechanisms of homeostatic regulation in fishes. Cooperative: open to WSU degree-seeking students. (~~Fall~~Spring, Alt/yrs)
Prereq: Permission.

FISH 516 Animal Movement, Dispersal and Migration
3 credits
Key theories and approaches for studying animal movement and dispersal in aquatic, marine and terrestrial environments, with critical analysis of empirical examples. Students are expected to develop an independent research project. The course includes a 3-day field trip touring important bird and fish migration locations in the Columbia Basin. Cooperative: open to WSU degree-seeking students

WLF 201 Fish and Wildlife Applications ~~I~~
~~1~~2 credits
This ~~two semester sequence (WLF 201, FISH 202) of~~ course~~s~~ will introduce students to ~~research questions and methods in fish and wildlife sciences~~ research and monitoring methods, data analysis and report writing in fish and wildlife sciences, ~~the culture and organization of~~ potential state, federal and tribal employers, and management challenges for fish and wildlife populations and habitats. The course will include an off campus experiential learning field trip and activities with professional mentors.
Prereq: NR 101 or Permission

WLF 370 Management and Communication of Scientific Data
~~2~~3 credits
~~Students will learn skills for managing and presenting scientific data. Spreadsheets and basic data management software, summary, and graphical representation.~~ Students will learn skills to analyze, manage and present scientific data in the fish and wildlife field. Analyses will be conducted in R, spreadsheets and basic data management software. Data summaries will include graphical and tabular presentation. Written presentation of scientific information will include organization, grammar, and citation formats appropriate for scientific reports.

WLF 371 Physiological Ecology of ~~Fish and~~ Wildlife
~~3~~2 credits
Study of how biotic and abiotic components of the environment influence animal physiology, and how the physiology of animals influences their ecology (e.g., behavior, distribution, etc.). Major topics include energetics, thermal ecology, nutritional ecology, reproductive physiology, ~~osmoregulation, and endocrinology~~locomotion and movement, and adaptations to extreme environments . (Spring only)
Prereq: BIOL 213

WLF 448 Fish and Wildlife Population Ecology
4 credits
Dynamics of animal populations resulting from balance between birth, death, and movement processes; quantitative methods for measuring distribution, abundance, survival and population growth; competition, predation, and self-regulation; viability and management of fish and wildlife populations. Three lec and one lab a wk. One weekend field trip required. (Spring only)
Prereq: STAT 251; MATH 160 or 170.

WLF 575 Behavioral Ecology
2 credits
Behavioral Ecology is the study of evolutionary causes and fitness consequences of behavioral decisions by animals. This course will explore theoretical and empirical approaches to understanding behavioral ecology across a diversity of species, with an emphasis on vertebrates. The format will include short lectures and facilitated discussions of primary literature. The course is open to graduate students and seniors with instructor permission. Cooperative: Available to WSU degree-seeking students.

3. Make the following curricular changes to the **Fishery Resources Major** (B.S.Fish.Res.):
Students pursuing a B.S. degree in fishery resources (management or aquaculture emphasis) must have received a grade of C or better in each of the following four indicator courses to register for fish- and wildlife-prefixed upper-division courses and to graduate with a B.S.Fish.Res.: BIOL 114 and BIOL 213, STAT 251, and FOR 221.
To graduate, students must achieve a grade of C or better in ~~FISH 481, and~~ each fish- and wildlife-prefixed upper-division course listed in the requirements for the B.S. degree in fishery 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
COMM 101	Fundamentals of Public Speaking	2
CHEM 275 or CHEM 277	Carbon Compounds Organic Chemistry I	3
ECON 202	Principles of Microeconomics	3
FISH 102	The Fish and Wildlife Professions	1
~~FISH 202~~	~~Fish & Wildlife Applications II~~	~~1~~
FOR 221	Principles of Ecology	3
FOR 235	Society and Natural Resources	3
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3

MATH 160 or MATH 170	Survey of Calculus Analytic Geometry and Calculus I	4
NR 101	Exploring Natural Resources	2
STAT 251	Statistical Methods	3
WLF 201	Fish and Wildlife Applications ~~1~~	~~1~~2
WLF 370	Management and Communication of Scientific Data	2
Select one of the following:		4-5
CHEM 101 & 101L	Introduction to Chemistry and Introduction to Chemistry Laboratory	
CHEM 111 & 111L	Principles of Chemistry I and Principles of Chemistry I Laboratory	
Select one of the following:		**4**
GEOG 100 & 100L	Physical Geography and Physical Geography Lab	
GEOL 101 & 101L	Physical Geology and Physical Geology Lab	
PHYS 100 & 100L	Fundamentals of Physics and Fundamentals of Physics Lab	
PHYS 111 & 111L	General Physics I and General Physics I Lab	
Third and Fourth Years		
BIOL 250	General Microbiology	3
BIOL 255	General Microbiology Lab	2
BIOL 310 or GENE 314	Genetics General Genetics	3
FISH 314	Fish Ecology	3
FISH 315	Fish Ecology ~~Lab~~Field Techniques and Methods	2~~1~~
FISH 398 or WLF 398	Renewable Natural Resources Internship Renewable Natural Resources Internship	2
FISH 411	Fish Physiology	2
FISH 415	Limnology	4
FISH 418	Fisheries Management	4
FISH 422 or FISH 424	Concepts in Aquaculture Fish Health Management	4
FISH 481	Ichthyology	4
FISH 495	Fisheries Seminar	1
NRS 383	Natural Resource and Ecosystem Service Economics	3
~~WLF 371~~	~~Physiological Ecology of Fish and Wildlife~~	~~3~~
WLF 448	Fish and Wildlife Population Ecology	4
Select one of the following electives:[1]	**3-4**	
FISH 422	Concepts in Aquaculture	
FISH 424	Fish Health Management	
FISH 430	Riparian Ecology	
FISH 450 & FISH 451	Freshwater invertebrates Freshwater invertebrates Field Methods	

Total Hours	~~88~~95-97
Courses to total 120 credits for this degree	

[1]Note: if choosing FISH 422 or 424 it must be a different course than selected above

4. **Make the following curricular changes to the Wildlife Resources Major (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, NRS 321.
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 or CHEM 277	Carbon Compounds Organic Chemistry I	3
COMM 101	Fundamentals of Public Speaking	2
ECON 202	Principles of Microeconomics	3
~~FISH 202~~	~~Fish & Wildlife Applications II~~	~~1~~
FOR 221	Principles of Ecology	3
FOR 235	Society and Natural Resources	3
MATH 160 or MATH 170	Survey of Calculus Analytic Geometry and Calculus I	4
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 ~~I~~	~~1~~2
WLF 370	Management and Communication of Scientific Data	2
Select one of the following:		**3-4**
FOR ~~320~~220	Dendrology	
REM 341	Systematic Botany	
REM 252 & REM 253	Wildland Plant Identification and Wildland Plant Identification Field Studies	
Select one of the following:		**4**
GEOL 101 & 101L	Physical Geology and Physical Geology Lab	
PHYS 100 & 100L	Fundamentals of Physics and Fundamentals of Physics Lab	
PHYS 111 & 111L	General Physics I and General Physics I Lab	

SOIL 205 & SOIL 206	The Soil Ecosystem and The Soil Ecosystem Lab	
Third and Fourth Years		
BIOL 310 or GENE 314	Genetics General Genetics	3
FISH 398 or WLF 398	Renewable Natural Resources Internship Renewable Natural Resources Internship	2
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
NRS 383	Natural Resource and Ecosystem Service Economics	3
~~REM 411~~ WLF 411	~~Ecological Monitoring and Analysis~~ Wildland Habitat Ecology and Assessment	2
WLF 314	Ecology of Terrestrial Vertebrates	3
WLF 315	Techniques Laboratory	2
WLF 371	Physiological Ecology of ~~Fish and~~ Wildlife	~~3~~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 387	Environmental Communication Skills	
NRS 462	Natural Resource Policy	
NRS 311	Public Involvement in Natural Resource Management	
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		~~**92-95**~~ **91-94**

Courses to total 120 credits for this degree

5. Make the following curricular changes to the **Tribal Natural Resource Stewardship Undergraduate Certificate:**

AIST 314	Tribal Sovereignty and Federal Policy	3
AIST 298	Internship	1
or AIST 498	Internship	~~1-16~~
~~FISH 495~~	~~Fisheries Seminar~~	~~1~~
FOR 310	Indigenous Culture and Ecology	3
FOR 375 or GEOG 385	Introduction to Spatial Analysis for Natural Resource Management GIS Primer	3
REM/FOR 221	Principles of Ecology	3

/WLF 220		
REM 280	Introduction to Wildland Restoration	2
~~SOIL 205~~	~~The Soil Ecosystem~~	~~3~~
Select one of the following:		**4**
Chem101 & Chem 101L	Introduction of Chemistry and Introduction to Chemistry Lab	
Geol101 & Geol 101L	Physical Geology and Physical Geology Lab	
Phys 101& Phys101L	Fundamentals of Physics and Fundamentals of Physics Lab	
SOIL 205 & SOIL 206	The Soil Ecosystem and The Soil Ecosystem Lab	
Select one of the following:		**3-4**
BE 433	Bioremediation	
BE 450	Environmental Hydrology	
FISH 314	Fish Ecology	
FISH 415	Limnology	
FISH 430	Riparian Ecology and Management	
FOR 326	Fire Ecology and Management	
FOR 462	Watershed Science and Management	
GEOG 424	Hydrologic Applications of GIS and Remote Sensing	
LARC 480	The Resilient Landscape	
REM 280	Introduction to Wildland Restoration	
REM 440	Wildland Restoration Ecology	
REM 459	Rangeland Ecology	
WLF 314	Ecology of Terrestrial Vertebrates	
WLF 440	Conservation Biology	
Select one of the following:		**3-4**
FISH 481	Ichthyology	
FOR ~~320~~220	Dendrology	
PLSC 205	General Botany	
REM 252	Wildland Plant Identification	
REM 253	Wildland Plant Identification Field Studies	
REM 341	Systematic Botany	
Total Hours		25-27~~25-42~~

Courses to total 26 credits for this certificate

FOREST, RANGELAND AND FIRE SCIENCES

1. Add the following courses:
   FOR 495 Business of Forestry
   2 credits
   Technical assessment of forestry from a business perspective at the stand and landscape levels, including an examination of factors that affect public and private landowner decision making regarding

management of timberland. Course integrates concepts from silviculture, forest management, and natural resource policy into decision making framework.
Prereq: Junior or Senior Standing

FOR 514 Forest Biometrics
3 credits
This course provides a broad overview of forest biometrics, including forestry-specific sampling approaches, development of allometric relations, and use of remote sensing datasets.
Prereq: STAT 431 or equivalent

REM 529 World Savannas
3 credits
This course provides a broad overview of world savannas including their characteristics and the ecosystem goods and services they provide. The course focuses on the ecological and biogeochemical characteristics of savannas, how humans use these ecosystems, current problems, and strategies land management are applying to solve them.

REM 570 Presentation Skills for Scientists
2 credits
A practical course to master the skills required for oral presentations for research, teaching, and outreach. A detailed examination of all elements that must be integrated and mastered for an effective and engaging oral presentation

2. Change the following courses:
FOR 102 Introduction to Forest Management
~~1~~2 credits
Intro to forestry, current management issues, timber and non-timber resources, educational and professional opportunities. Includes regional field trips ranging in length from one afternoon to one weekend. Cooperative: open to WSU degree-seeking students.

FOR 274 Forest Measurement and Inventory
3 credits
Practical techniques for the design and execution of vegetation measurements for the inventory of forests, understory~~shrublands~~, and fire-fuels. ~~Three one-hour lectures and one three-hour lab per week. (Fall only)~~ Course offered in fall and summer. Summer offering is an intensive three-week course held at the University of Idaho McCall Field Campus in McCall, Idaho. Field trips occur frequently to provide hands-on training in forest measurement techniques. (Fall, Summer only).
Prereq: MATH 143; or SAT math score of 610 or above, or ACT math score of 27 or above.
Prereq or Coreq: MATH 144

FOR 275 Forestry Resource Sampling
2 credits
Principles and practice of natural resource inventory, forest sampling and data analysis techniques, LIDAR, forest growth, and quantitative decision support. Lab analysis examples and use of Excel and statistical packages are integrated into lectures. Field trips required.
Coreq: FOR 274 and STAT 251

FOR ~~320~~220 Forest Biology and Dendrology
~~4~~3 credits
Phylogenetic approach to understanding the systematics, morphology, geography, and ecology of the major species of North American woody plants. Includes identification and classification of important tree species of North American and other important woody plants of the Pacific Northwest and northern Rocky Mountains. Three lectures and two 1.5-hour labs a week; two 1-day field trips.
Prereq or Coreq: BIOL 114 ~~or PLSC 205~~

FOR 430 Forest Operations
3 credits
Overview of the primary equipment and harvesting systems used in modern forest operations, including field design, layout, and administration of timber sales, logging production and cost estimation, laws, and certification. A brief introduction to quantitative forest planning methods is also provided. There are 2-3 early morning trips and one Saturday field lab (Fall only). Cooperative: open to WSU degree-seeking students.
Prereq: FOR 102, PHYS 100/PHYS 100L or PHYS 111/PHYS 111L
Prereq or Coreq: MATH 144.

REM 411 ~~Ecological Monitoring and Analysis~~ Wildland Habitat Ecology and Assessment
2 credits
Cross-listed with WLF 411
This course integrates field sampling with quantitative and theoretical concepts related to scientific research, wildlife habitat, and land management practices. Students collect, analyze, and report on ecological data in various formats, and learn specific protocols used by professionals to assess wildlife habitat. Class field trips required. Recommended preparation: REM 252 and REM 253, REM 341, or other plant identification class; ability to use excel. Co-enrollment in REM 410 is recommended.
Prereq: STAT 251 or Permission.

REM 440 ~~Wildland~~ Restoration Ecology
3 credits
Cross-listed with NRS 440
~~Ecological principles and management practices involved in restoring and rehabilitating wildland ecosystems after disturbance or alteration to return damaged ecosystems to a productive and stable state. (Spring only)~~ The ecological restoration of disturbed ecosystems. Fundamental principles from ecology, ecophysiology, and community ecology are used in a systems ecology approach to examine how the structure and function of damaged ecosystems can be restored – with the goal of establishing a stable and self-sustaining ecosystem.
Prereq: ~~FOR 221, or REM 221, or equivalent general ecology course~~(e.g., NR 321, FOR 221, REM 221, WLF 220, BIOL 314), or permission.

3. Make the following curricular changes to the **Forestry Major** (B.S.Forestry):
Students must have a minimum cumulative grade-point average of 2.00 in forestry (FOR) courses to qualify for the B.S. degree in forestry.
Required course work includes the university requirements (see regulation J-3) and:

BIOL 114	Organisms and Environments	4
ECON 202	Principles of Microeconomics	3

ENT 469	Introduction to Forest Insects	2
FOR 102	Introduction to Forest Management	~~1~~2
FOR 220	Forest Biology and Dendrology	3
FOR 221	Principles of Ecology	3
FOR 235	Society and Natural Resources	3
FOR 275	Forestry Resource Sampling	2
FOR 274	Forest Measurement and Inventory	3
~~FOR 320~~	~~Dendrology~~	~~4~~
FOR 324	Forest Regeneration	3
FOR 330	Forest Soil and Canopy Processes	4
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
FOR 424	Silviculture Principles and Practices	4
FOR 430	Forest Operations	3
FOR 462	Watershed Science and Management	3
FOR 468	Forest and Plant Pathology	2
FOR 484	Forest Policy and Administration	2
FOR 495	Business of Forestry	2
MATH 143	Pre-calculus Algebra and Analytic Geometry [1]	3
MATH 144	Analytic Trigonometry [1]	1
NR 101	Exploring Natural Resources	2
NRS 383	Natural Resource and Ecosystem Service Economics	3
~~PHYS 100~~	~~Fundamentals of Physics~~	~~3~~
~~PLSC 205~~	~~General Botany~~	~~4~~
REM 144 or FOR 326	Wildland Fire Management Fire Ecology and Management	3
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
STAT 251	Statistical Methods	3
Select one of the following:		**4**
CHEM 101 & 101L	Introduction to Chemistry and Introduction to Chemistry Laboratory	
CHEM 111 & 111L	Principles of Chemistry I and Principles of Chemistry I Laboratory	
Select one of the following:		**4**
PHYS 100 & 100L	Fundamentals of Physics and Fundamentals of Physics Lab	
PHYS 111 & 111L	General Physics 1 and General Physics 1 Lab	
Advisor Approved Electives or Minor		
Select 13 credits of advisor approved Electives OR one of the following minors:		13-22
Business		
Ecology		
Environmental Communication		

Fire Ecology and Management	
Fishery Resourses	
Forest Operations	
Horticulture	
Natural Resource Conservation	
Natural Resources Economics	
Renewable Materials	
Rangeland Ecology and Management	
Soil Science	
Wildlife Resources	
Total Hour	~~**92-101**~~ **102-111**

Courses to total 120 credits for this degree

[1] A SAT math score of 610 or above, or ACT math score of 27 or above can be used to satisfy the MATH 143 and MATH 144 requirements.

NATURAL RESOURCES

1. Add the following courses:
   NR 211 Undergrad Research Experience I
   2 credits
   Introduction to the scientific method in natural resources and environmental sciences, including ethics as it applies to research. Students are selected through an application process and are provided a budget to pursue a research topic of interest. Depending on project, student may participate in field trips and laboratory study.

   NR 212 Undergrad Research Experience II
   1 credit
   Continuation of NR 210. Focus on describing data and various methods of reporting research results. Depending on project, student may participate in field trips and laboratory study. Participation in UI Undergraduate Research Symposium is expected.
   Prereq: NR 210

2. Make the following curricular changes to the **Ecology and Conservation Biology Major** (B.S.Ecol.Cons.Biol.):
   The program requires 120 credits, and students must choose either the natural resources ecology or conservation biology option. Students pursuing a B.S. in Ecology & Conservation Biology must receive a grade of 'C' or better in each of the following 4 indicator courses to register in upper division courses in NRS/FISH/FOR/REM/WLF and to graduate with a B.S. in either
   option: BIOL 114, BIOL 213, STAT 251, FOR 221, WLF 220, or NR 321 ~~or REM 221~~. Before students are allowed to begin their senior thesis or project (485 or 497), they must attend two evening thesis / project sessions and one senior poster presentation.
   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 314~~ ~~or FOR 221~~	~~Ecology and Population Biology~~ ~~Principles of Ecology~~	3-4
COMM 101	Fundamentals of Public Speaking	2
ECON 202 or ECON 272	Principles of Microeconomics Foundations of Economic Analysis	3-4
ENGL 317 or WLF 370	Technical Writing Management and Communication of Scientific Data	3
FOR 235	Society and Natural Resources	3
FOR ~~3~~220 or REM 341	Dendrology Systematic Botany	3-4
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
MATH 160 or MATH 170	Survey of Calculus Analytic Geometry and Calculus I	4
NR 101	Exploring Natural Resources	2
NR 200	Seminar	1-16
NR 300	Ecology and Conservation Biology Thesis Seminar	1
NRS 383	Natural Resource and Ecosystem Service Economics	3
STAT 251	Statistical Methods	3
Select one of the following:		**3-4**
BIOL 314	Ecology and Population Biology	
FOR/REM 221 /WLF 220	Principles of Ecology	
NR 321	Ecology	
Select one of the following:		**4**
CHEM 101 & 101L	Introduction to Chemistry and Introduction to Chemistry Laboratory	
CHEM 111 & 111L	Principles of Chemistry I and Principles of Chemistry I Laboratory	
Select one of the following:		**1**
FISH 473	ECB Senior Presentation	
FOR 473	ECB Senior Presentation	
NRS 473	ECB Senior Presentation	
REM 473	ECB Senior Presentation	
RMAT 473	ECB Senior Presentation	
WLF 473	ECB Senior Presentation	
Select one of the following:		**3**
FISH 485	Ecology and Conservation Biology Senior Project (Max 3 credits)	
FISH 497	Senior Thesis (Max 6 credits)	
FOR 497	Senior Thesis (Max 98 credits)	
NR 497	Senior Thesis (Max 3 credits)	
REM 497	Senior Research and Thesis	
WLF 497	Senior Thesis (Max 6 credits)	
Options		
Select one of the following options:		

Natural Resources Ecology		
Conservation Biology		
Total Hours		~~54-72~~ 55-76

A. Natural Resources Ecology Option

The natural resources ecology option combines ecological theory, field experience, and quantitative tools to gain an interdisciplinary understanding of the structure and function of ecosystems. This field covers ecological topics from local, regional, and landscape scales while integrating the social and biophysical worlds.

To graduate in this option, students must achieve a "C" or better in the following six core courses: NR 200, FOR 330, REM 429, SOIL 205/SOIL 206, and WLF 448.

FOR 330	Forest Soil and Canopy Processes	4
REM 429	Landscape Ecology	3
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
WLF 448	Fish and Wildlife Population Ecology	4
Select one of the following:		3
PHYS 100 & 100L	Fundamentals of Physics and Fundamentals of Physics Lab	
PHYS 111 & 111L	General Physics I and General Physics I Lab	
Select one Quantitative Resource Analysis Restricted elective from the following:		2-4
FOR 472	Remote Sensing of the Environment	
GEOG 385	GIS Primer	
NRS 310	Social Science Methods	
REM 410	Principles of Vegetation Measurement and Assessment [1]	
REM 411	~~Ecological Monitoring and Analysis~~ Wildland Habitat Ecology and Assessment [1]	
WLF 411	Wildland Habitat Ecology and Assessment	
STAT 431	Statistical Analysis	
STAT 422	Sample Survey Methods	
Select one Resource Management Restricted elective from the following:		**3-4**
FISH 418	Fisheries Management	
FOR 424	Silviculture Principles and Practices	
FOR 462	Watershed Science and Management	
NRS 386	Social-Ecological Systems	
NRS 490	Wilderness and Protected Area Management	
NRS 496	Monitoring Impacts in Protected Areas and Wilderness	
REM 456	Integrated Rangeland Management	
WLF 492	Wildlife Management	
Select 10 credits of Ecology Restricted electives from the following: [2]		**10**
BIOL 421	Advanced Evolution/Population Dynamics	
BIOL 478	Animal Behavior	
ENT 469	Introduction to Forest Insects	
FISH 314	Fish Ecology	
FISH 315	Fish Ecology ~~Lab~~Field Techniques and Methods	

FISH 415	Limnology	
FISH 430	Riparian Ecology and Management	
FOR 326	Fire Ecology and Management	
FOR 468	Forest and Plant Pathology	
GEOG 410	Biogeography	
PLSC 410	Invasive Plant Biology	
REM 440	Wildland Restoration Ecology	
REM 459	Rangeland Ecology	
REM 460	Integrating GIS and Field Studies in Rangelands	
WLF 314	Ecology of Terrestrial Vertebrates	
WLF 315	Techniques Laboratory	
WLF 440	Conservation Biology	
Select one Social/Political Restricted elective from the following:		**2-3**
COMM 410	Conflict Management	
FOR 484	Forest Policy and Administration	
GEOG 420	Land, Resources, and Environment	
HIST 424	American Environmental History	
NRS 387	Environmental Communication Skills	
NRS 462	Natural Resource Policy	
NRS 311	Public Involvement in Natural Resource Management	
NRS 493	International Land Preservation and Conservation Systems	
PHIL 452	Environmental Philosophy	
POLS 364	Politics of the Environment	
Total Hours		**35-39**

Courses to total 120 credits for this degree

[1] Both REM 410 and REM 411 must be completed to satisfy Quantitative Resource Analysis Restricted Elective requirement.

[2] At least 2 credits from FISH 315, FISH 415, FISH 430, REM 460, and/or WLF 315

B. Conservation Biology Option

The conservation biology option is centered around a multidisciplinary curriculum that provides students with training to work in jobs aimed at conserving the earth's biodiversity. This option provides a broad-based education that covers biological diversity from the genetic level to the landscape level, and provides additional training in social sciences and management. In the words of Hunter (1996), "Conservation biology is cross-disciplinary, reaching far beyond biology into subjects such as philosophy, economics, and sociology; disciplines that are concerned with the social environment in which we practice conservation--as well as into subjects such as law and education that determine the ways we implement conservation."

To graduate in this option, students must achieve a "C" or better in the following seven core courses: BIOL 421, NR 200, REM 429, PHIL 452, WLF 440, and WLF 448.

BIOL 310 or GENE 314	Genetics General Genetics	3
BIOL 421	Advanced Evolution/Population Dynamics	3
NRS 493 or ENVS 225	International Land Preservation and Conservation Systems International Environmental Issues Seminar	3

PHIL 452	Environmental Philosophy	3
REM 429	Landscape Ecology	3
WLF 440	Conservation Biology	3
WLF 448	Fish and Wildlife Population Ecology	4
Select one Quantitative Resource Analysis Restricted elective from the following:		**2-4**
FOR 472	Remote Sensing of the Environment	
GEOG 385	GIS Primer	
NRS 310	Social Science Methods	
REM 410	Principles of Vegetation Measurement and Assessment [1]	
REM 411	Ecological Monitoring and Analysis [1]	
STAT 422	Sample Survey Methods	
STAT 431	Statistical Analysis	
Select one Resource Management Restricted elective from the following:		**3-4**
FISH 418	Fisheries Management	
FOR 424	Silviculture Principles and Practices	
FOR 462	Watershed Science and Management	
NRS 386	Social-Ecological Systems	
NRS 490	Wilderness and Protected Area Management	
NRS 496	Monitoring Impacts in Protected Areas and Wilderness	
REM 456	Integrated Rangeland Management	
WLF 492	Wildlife Management	
Select 6 credits of Ecology Restricted electives from the following: [2]		**6**
BIOL 478	Animal Behavior	
ENT 469	Introduction to Forest Insects	
FISH 314	Fish Ecology	
FISH 315	Fish Ecology ~~Lab~~Field Techniques and Methods	
FISH 415	Limnology	
FISH 430	Riparian Ecology and Management	
FOR 330	Forest Soil and Canopy Processes	
FOR 326	Fire Ecology and Management	
FOR 468	Forest and Plant Pathology	
GEOG 410	Biogeography	
PLSC 410	Invasive Plant Biology	
REM 440	Wildland Restoration Ecology	
REM 459	Rangeland Ecology	
REM 460	Integrating GIS and Field Studies in Rangelands	
WLF 314	Ecology of Terrestrial Vertebrates	
WLF 315	Techniques Laboratory	
Select one Organismal Biology Restricted elective from the following:		**3-4**
BIOL 483	Mammalogy	
BIOL 489	Herpetology	
FISH 481	Ichthyology	
WLF 482	Ornithology	
Select one Social/Political Restricted elective from the following:		**2-3**

COMM 410	Conflict Management	
ENVS 225	International Environmental Issues Seminar	
FOR 484	Forest Policy and Administration	
GEOG 420	Land, Resources, and Environment	
HIST 424	American Environmental History	
NRS 387	Environmental Communication Skills	
NRS 462	Natural Resource Policy	
NRS 311	Public Involvement in Natural Resource Management	
NRS 386	Social-Ecological Systems	
POLS 364	Politics of the Environment	
Total Hours		38-43

[1] Both REM 410 and REM 411 must be completed to satisfy Quantitative Resource Analysis Restricted Elective requirement.

[2] At least 2 credits from FISH 315, FISH 415, FISH 430, REM 460, and/or WLF 315

Courses to total 120 credits for this degree

3. Make the following curricular changes to the **Natural Resources Major, Environmental Education and Science Communication Option** (M.N.R.):

NRS 501	Seminar: Contemporary Issues in Society and Natural Resources	2
Ecology and Management		**8**
NRS 565	Science Communication and the Environment	
NRS 575	Leadership for the Environmental Educator	
Policy Planning and Law		***6***
NRS 563	Place Based Env. Education	
NRS 568	Environmental Education Teaching Practicum II	
Tools and Technology		***6***
NRS 562	Field Science Teaching	
NRS 564	Teaching Environmental Education in a Winter Environment	
NRS 567	Environmental Education Teaching Practicum I	
Case Study Project		***3***
NRS 502	Directed Study	
NRS 599	Research	
Select 3 credits from the following:		**3**
NRS 504	Special Topics	
NRS 569	Environmental Education Teaching Practicum III	
Total Hours		**~~32~~34**

Courses for this option to total ~~32~~34 credits

NATURAL RESOURCES AND SOCIETY

1. Change the following courses:
NRS 386 Social-Ecological Systems
3 credits
Cross-listed with ENVS 386

Social-ecological systems are comprised of interconnected social, economic, and environmental components. Explore social-ecological systems frameworks and fundamental principles of sustainability in 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 475 ~~Conservation Planning and Management~~ Local & Regional Environmental Planning
~~4~~3 credits
~~Gen Ed: Senior Experience~~
Cross-listed with ENVS 475
~~Advanced theory, processes and techniques for the management and planning of conservation systems and working landscapes. In-depth focus on conservation planning approaches such as comprehensive, strategic, advocacy and communicative action planning; critical examination of sprawl and the alternatives for managing land use and development on natural sites and larger landscapes at the urban-rural interface. Collaborative group exercises, a community Service-Learning Project and required field trips.~~ This course focuses on environmental planning by governments, nonprofit organizations, and collaborative partnerships at the local and regional level. Students will study a variety of planning approaches, such as community visioning and policy and management tools. Topics will include planning for public health, natural areas, working landscapes, and the built environment.
Prereq: Junior or Senior standing; or Permission

NRS ~~411~~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

College of Science

BIOLOGICAL SCIENCES

1. Add the following course:
   BIOL 151 Introduction to the Health Professions
   1 credit
   This course is primarily for first- and second-year students, but all students interested in healthcare careers are welcome. The primary content of this course is centered on a series of presentations by guests from a variety of health professions, ranging from occupational therapy to dentistry. Students will learn about the presenters' educational process and personal journey to become a professional in their chosen field, as well as the responsibilities, professional interactions, joys, and challenges of working in that field. Discussions and assignments are designed to broaden the perspective of the healthcare field for the student, and to begin preparing them to be successful applicants in their chosen field. This is a dynamic course and the content varies from one year to the next due to the availability of guest speakers and number of students registered.

2. Change the following courses:

BIOL 213 Principles of Biological Structure and Function
4 credits
Principles of physiology in plants and animals (homeostasis, hormonal and neural control systems, organismal physiology). Three lectures and one 3-hour lab a week. (Spring only)
Prereq: BIOL 114 or both BIOL 115~~,~~and BIOL 115L.

BIOL 300 Survey of Biochemistry
3 credits
Carries no credit after BIOL 380. Survey of biochemical principles and the molecular structure and function that describe the chemical basis of life. (Fall only)
Prereq: ~~CHEM 101 and CHEM 101L or CHEM 111 and CHEM 111L~~ CHEM 275 or CHEM 277
~~Coreq: CHEM 275 or CHEM 277~~

BIOL 411 Senior Capstone
2 credits
Gen Ed: Senior Experience
Application of biological principles and information to the analysis of societal and philosophical issues. (Spring only)
Prereq: BIOL 213 or BIOL 250, BIOL 310, BIOL 312, BIOL 314 or BIOL 380, and Senior standing.

BIOL 421 Advanced Evolution/Population Dynamics
3 credits
~~Macro and Micro evolutionary patterns and processes examined from molecular, ecological, and paleontological perspectives. (Spring only)~~ Scientific understanding of the processes of evolution, the history of life on earth, and application of evolutionary principles across fields in biology. (Spring only)
Prereq: One of BIOL 310 or BIOL 314~~,~~or FOR 221 or REM 221 or WLF 220.

BIOL 474 ~~Principles of~~ Developmental Biology
3 credits
Joint-listed with BIOL 573
~~Analysis of mechanisms at cellular and molecular level during metazoan development. (Spring, Alt/yrs)~~ Embryology of model organisms, mechanisms of developmental processes, reproductive biology, stem cells, growth, and tissue regeneration. Additional projects/assignments required for graduate credit. (Fall, Alt/yrs).
Prereq: ~~BIOL 114 and BIOL 115, BIOL 115L;~~ BIOL 310 or BIOL 312.

BIOL 573 ~~Principles of~~ Developmental Biology
3 credits
Joint-listed with BIOL 474.
~~Analysis of mechanisms at cellular and molecular level during metazoan development. (Spring, Alt/yrs)~~ Embryology of model organisms, mechanisms of developmental processes, reproductive biology, stem cells, growth, and tissue regeneration. Additional projects/assignments required for graduate credit. (Fall, Alt/yrs).
Prereq: ~~BIOL 114 and BIOL 115, BIOL 115L;~~ BIOL 310 or BIOL 312

3. Make the following curricular changes to the **Biology Major** (B.A. or B.S.)
To graduate in this program, students must earn a minimum grade of "C" in BIOL 114, ~~and~~ BIOL 115, and BIOL 115L. Required course work includes the university requirements (see regulation J-3) and:

4. Make the following curricular changes to the **Biochemistry Major** (B.S.Biochem.):
To graduate in this program, students must earn a minimum grade of "C" in BIOL 114, ~~and~~ 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	Principles of Chemistry I	3
CHEM 111L	Principles of Chemistry I Laboratory	1
CHEM 112	Principles of Chemistry II	4
CHEM 112L	Principles of Chemistry II Laboratory	1
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	Analytic Geometry and Calculus I	4
MATH 175	Analytic Geometry and 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
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	
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	
Additional classes can be substituted with prior approval from adviser and chairperson		
Select one of the following:		**3**
ENGL 207	Persuasive Writing	
ENGL 208	Personal & Exploratory Writing	
ENGL 317	Technical 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

5. Make the following curricular changes to the **Molecular Biology and Biotechnology Major** (B.S.M.B.B.): To graduate in this program, students must earn a minimum grade of "C" in BIOL 114, ~~and~~ 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 or BIOL 487	Prokaryotic Molecular Biology Eukaryotic Molecular Genetics	3
CHEM 111	Principles of Chemistry I	3
CHEM 111L	Principles of Chemistry I Laboratory	1
CHEM 112	Principles of Chemistry II	4

CHEM 112L	Principles of Chemistry II Laboratory	1
CHEM 277	Organic Chemistry I	3
CHEM 278	Organic Chemistry I: Lab	1
CHEM 372	Organic Chemistry II	3
MATH 170	Analytic Geometry and Calculus I	4
PLSC 488	Genetic Engineering	3
STAT 251 or STAT 301	Statistical Methods Probability and Statistics	3
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	Principles of 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	
PLSC 476	Cell Biology	
Select four credits from ~~one of~~ 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	
BIOL 408	Practicum in Human Physiology Laboratory Teaching	
BIOL 411	Senior Capstone	
Select one of the following:		**3**
ENGL 207	Persuasive Writing	
ENGL 208	Personal & Exploratory Writing	
ENGL 317	Technical 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.*

6. Make the following curricular changes to the **Microbiology Major** (B.S.Microbiol.):
To graduate in this program, students must earn a minimum grade of "C" in BIOL 114, ~~and~~ 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 400	Seminar	1-16
BIOL 401	Undergraduate Research	1-4
Or BIOL 301	Undergraduate Research	
or PLSC 440	Advanced Laboratory Techniques	
CHEM 111	Principles of Chemistry I	3
CHEM 111L	Principles of Chemistry I Laboratory	1
CHEM 112	Principles of Chemistry II	4
CHEM 112L	Principles of Chemistry II Laboratory	1
CHEM 277	Organic Chemistry I	3
CHEM 278	Organic Chemistry I: Lab	1
CHEM 372	Organic Chemistry II	3
MATH 170	Analytic Geometry and Calculus I	4
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	
BIOL 411	Senior Capstone	
Select one of the following:		**3**
ENGL 207	Persuasive Writing	
ENGL 208	Personal & Exploratory Writing	
ENGL 317	Technical 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 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	
FS 416	Food Microbiology	
FS 417	Food Microbiology Laboratory	
MATH 437	Mathematical Biology	
PLSC 476	Cell Biology	
PLSC 488	Genetic Engineering	
STAT 251 or STAT 301	Statistical Methods Probability and Statistics	
SOIL 425	Microbial Ecology	
Total Hours		**75-93**

Course List

Courses to total 120 credits for this degree

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

~~*Note: for double majors in Molecular Biology and Microbiology: Elective courses that count toward one degree cannot be counted as a science elective in the second degree.*~~

7. Make the following curricular changes to the **Microbiology Minor:**

BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells & the Evolution of Life Lab	1
BIOL 250	General Microbiology	3
BIOL 255	General Microbiology Lab	2
BIOL 380	Biochemistry I	4
Select three courses from the following:		**9-10**
BIOL 416	Systems Biology	
BIOL 432	Immunology	
BIOL 433	Pathogenic Microbiology	
BIOL 447	Virology	
BIOL 485	Prokaryotic Molecular Biology	

BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells & the Evolution of Life Lab	1
BIOL 487	Eukaryotic Molecular Genetics	
FS 416	Food Microbiology	
~~PLSC 440~~	~~Advanced Laboratory Techniques~~	
~~PLSC 488~~	~~Genetic Engineering~~	
SOIL 425	Microbial Ecology	
Total Hour		~~18-19~~22-23

Courses to total ~~18~~22 credits for this minor

CHEMISTRY

1. Change the following courses:

CHEM 111 ~~Principles of~~ General Chemistry I
3 credits
Gen Ed: Natural and Applied Sciences
Full credit may be earned in only one of the following: CHEM 101, or CHEM 111. Note that grades in CHEM 111 will supersede any grades earned in CHEM 101. Intensive treatment of principles and applications of chemistry. Recommended Preparation: A grade of 'B' or better in a high school chemistry course.
Prereq: min 580 SAT math or min 25 ACT math , or min 46 ALEKS; or a grade of 'C' or better in CHEM 101, MATH 143, MATH 160, or MATH 170; or Permission

CHEM 111L ~~Principles of~~General Chemistry I Laboratory
1 credit
Gen Ed: Natural and Applied Sciences
This is the companion laboratory course to CHEM 111 and provides an intensive treatment of Chemistry lab practices. One 3-hour lab a week.
Prereq or Coreq: CHEM 111

CHEM 112 ~~Principles of~~ General Chemistry II
~~4~~3 credits
Gen Ed: Natural and Applied Sciences
Continuation of CHEM 111. Some work in inorganic chemistry, kinetics, equilibrium, liquids, solids, acid-base, electrochemistry, nuclear chemistry, thermodynamics, and qualitative inorganic analysis. ~~Three lecture and one recitation.~~
Prereq: CHEM 111 and CHEM 111L or Permission.

CHEM 112L ~~Principles of~~ General Chemistry II Laboratory
~~1~~2 credit
Gen Ed: Natural and Applied Sciences
This is the companion laboratory course to CHEM 112 and teaches Chemistry lab practices in inorganic chemistry, kinetics, equilibrium, acid-base, electrochemistry, thermodynamics, and qualitative analysis. One 3-hour lab and one recitation hour a week.
Prereq or Coreq: CHEM 112

GEOGRAPHY

1. Add the following course:
   GEOG 488 Geography of Energy Systems
   3 credits
   This course examines geographic dimensions associated with the production, distribution, acquisition, consumption and storage of energy. Geographic tools and techniques will be used to analyze, understand and deconstruct complexity and nuance across various modes of production, current topics and challenges along with future considerations such as transitioning to renewable energy sources. The course will split time between classroom settings, field trips to energy installations on campus and across the inland Northwest, in addition applied learning activities.

2. Reactivate the following course:
   GEOG 440 Geoeconomics ~~Alternative Spatial Economy~~
   3 credits
   Course will explore the relationship between economy, geopolitics and foreign policy using alternative approaches to neoclassical economics and classical economic geography at the global and regional scale ~~useful in economic geography~~. Steady state economy, New-Keynesianism, dependence and uneven development, the world-systems perspective, evolutionary economics and Marxist perspectives are presented. Cooperative: Open to WSU degree-seeking students.
   Prereq: ~~GEOG 345 or GEOG 350 or Permission of Instructor~~ GEOG 260, 345 and STAT 251 or Permission of Instructor

3. Change the following courses:
   GEOG 402 GIS Skills Development
   1-3 credits, max 6
   Hands-on skills development in GIS and related technologies. Primary topics vary by semester, but may include topics such as GPS/GIS integration, web-based ~~server~~ GIS, project management and cartographic design. May be taken for credit multiple times.

   GEOG 479 GIS Programming
   3 credits
   ~~An introduction to the use of programming languages, such as Python with standard ArcGIS concepts.~~ This course introduces students to basic computational concepts using Python, an object-oriented scripting language, for data processing, analysis and application development. Contemporary research in analytical geography has placed an increasing demand on the computational skills of its practitioners. The advances in spatial data analysis and geographical modeling have also largely out-paced the capabilities of standard statistical software. At the same time, the multidisciplinary nature of the spatial sciences often translates into the need to deal with disparate data sources, formats and programming languages. As such, students undertaking research are often confronted with a daunting set of tasks that are seldom covered in an integrated fashion in course work. This course is designed to address this situation.
   Prereq: GEOG 475 ~~or GEOG 390.~~or by instructor permission

GEOLOGICAL SCIENCES

1. Change the following courses:
   GEOL 102 Historical Geology

3 credits
Gen Ed: Natural and Applied Sciences
Evolution of the physical earth, plants, and animals; techniques used in interpretation of geologic history. ~~Three lec and 2 hrs of lab a wk;~~ Includes one 1-day field trip.
Coreq: GEOL 102L or permission

GEOL 102L Historical Geology Lab
1 credit
Gen Ed: Natural and Applied Sciences
Evolution of the physical earth, plants, and animals; techniques used in interpretation of geologic history. ~~Three lec and 2 hrs of lab a wk; one 1-day field trip.~~

GEOL 423 Principles of Geochemistry
3 credits
Physiochemical principles applied to geologic processes. Topics covered include atmospheric geochemistry, environmental geochemistry, aqueous geochemistry, crystal chemistry, radiogenic and stable isotopes. ~~Two lec and one 2-hr lab a wk.~~ These topics provide an overview of the principles of physics and chemistry that define geochemistry and its use to understand Earth's geology. The objective of this course is to learn how geochemical processes control the distribution of elements from the core of the Earth to the atmosphere. Includes one three-day field trip.
Prereq: GEOL 249.

GEOL 431 Chemical Hydrogeology
3 credits
Joint-listed with GEOL 531.
An exploration of low temperature, aqueous geochemistry principles through examination of atmospheric, geologic, and biologic influences on water chemistry in surface and near-surface hydrologic environments. For graduate credit, students are required to complete an additional independent research paper or presentation. Recommended preparation: GEOL 423.
Prereq: CHEM 111/CHEM 111L .

GEOL 531 Chemical Hydrogeology
3 credits
Joint-listed with GEOL 431.
An exploration of low temperature, aqueous geochemistry principles through examination of atmospheric, geologic, and biologic influences on water chemistry in surface and near-surface hydrologic environments. For graduate credit, students are required to complete an additional independent research paper or presentation. Recommended preparation: GEOL 423.
Prereq: CHEM 111/CHEM 111L .

MATHEMATICS

1. Add the following course:
   MATH 559 Algebraic Number Theory
   3 credits
   Dedekind rings, algebraic integers, prime ideals and their splittings, decomposition group, inertia group, ideal class group, quadratic extensions and cyclotomic extensions. Some class field theory, including Frobenius automorphism, Artin automorphism, Hilbert class field, adéles and idéles.

Prereq: MATH 557 or permission

2. Change the following courses:

MATH 123 ~~**Mathematics Applied to the Modern World**~~**Math in Modern Society**
3 credits
Gen Ed: Mathematics
Discussion of some aspects of mathematical thought through the study of problems taken from areas such as logic, political science, management science, geometry, probability, and combinatorics; discussion of historical development and topics discovered in the past 100 years.

MATH 143 ~~**Pre-calculus Algebra and Analytic Geometry**~~**College Algebra**
3 credits
Gen Ed: Mathematics
Carries no credit after MATH 160 or MATH 170; carries 2 credits after MATH 137. Algebraic, exponential, logarithmic functions; graphs of conics; zeros of polynomials; systems of equations, induction. Taught using the Polya Math Center, a studio environment featuring group study, one-to-one interaction with instructors, computer-mediated modules, and lectures.
Prereq: Sufficient score on SAT, ACT, or math placement test; or MATH 108 with grade of C or better. It is recommended that MATH 143 be taken within two years of passing MATH 108 or its equivalent. Required test scores can be found here: http://www.uidaho.edu/registrar/registration/placement.

MATH 170 ~~**Analytic Geometry and**~~ **Calculus I**
4 credits
Gen Ed: Mathematics
Carries 2 credits after MATH 160. Functions, limits, continuity, differentiation, integration, applications, differentiation and integration of transcendental functions. Primarily for students in engineering, mathematics, science or computer science.
Prereq: MATH 143 (with a grade of C or better) and MATH 144 (concurrent enrollment in MATH 144 is allowed although it is recommended that students complete MATH 144 before enrolling in MATH 170); or demonstrated proficiency through a sufficiently high score on the ACT, SAT, or math placement test. Required test scores can be found here: http://www.uidaho.edu/registrar/registration/placement.

MATH 175 ~~**Analytic Geometry and**~~ **Calculus II**
4 credits
Gen Ed: Mathematics
Differentiation and integration of transcendental functions, integration techniques, general mean value theorem, numerical techniques, and series.
Prereq: MATH 170 with a grade of C or better.

MATH 275 ~~**Analytic Geometry and**~~ **Calculus III**
3 credits
Gen Ed: Mathematics
Vectors, functions of several variables, and multiple integration.
Prereq: MATH 175.

STATISTICAL SCIENCE

1. Make the following curricular changes to the **Statistics Major, General Option** (B.S.):

A. General Option

~~MATH 415~~	~~Cryptography~~	~~3~~
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 407	Experimental Design	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	
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		**45**

Courses to total 120 Credits for this degree