ECampus Sustainability Double Degree Program

Justification

In 2004 the Oregon State Board of Higher Education identified sustainability as “a key opportunity area for investment.” In a similar vein, the Board’s OUS Portfolio Subcommittee concluded in 2007 that OUS should “create a System reputation (each university, all universities together) for excellence in sustainability education and research.” Following these proclamations, the OUS convened the first annual Sustainability Summit in April 2008, one conclusion of which was that the system should work to “capitalize on Oregon’s strengths in sustainability and position it to be a world leader in education, research, facilities management, and community outreach.”

Sustainability is the philosophy that increasingly drives global business, organization and politics. Our changing world has presented challenges that future leaders will be called on to address, including climate change, reliance on traditional energy sources, water issues and a growing demand for socially and environmentally responsible products and services.

The BS in Sustainability Double-Degree program exposes students to these real-world problems and fosters knowledge, skills and abilities to address them in communities and workplaces. In step with the interdisciplinary nature of sustainability, the degree program was designed to compliment all OSU degree programs and to be earned as a second bachelor’s degree in addition to a major area of study. Graduates emerge prepared to communicate effectively, work collaboratively, and apply knowledge of economic, business, scientific, and sociological principles of sustainability to a variety of career fields.

The curriculum consists of 36-credits taken in addition to a student’s regular 180-credit OSU degree. The degree program consists of a sustainability core (emphasizing economics, social/political dimensions, and ecological dimensions), a sustainability-related practicum/internship (3 credits), and 11-16 credits of individualized study. Credits for individualized study are selected by students in cooperation with the sustainability program advisor, and can emphasize sustainability as it relates to a primary academic discipline.

The BS in Sustainability Double-Degree program is open to all students regardless of primary academic discipline, in addition to students who have completed an OSU baccalaureate degree. We are developing online versions of three of the core courses; the other core classes are already available as ECampus classes. Enough of the elective courses for the major are currently available online that once the core courses are offered online, it will be possible to complete the major by taking exclusively online courses.
New courses in the process of being developed as part of the core

<table>
<thead>
<tr>
<th>Proposed New Distance Course:</th>
<th>Faculty and Target Date for completion:</th>
<th>Annual Frequency:</th>
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</thead>
<tbody>
<tr>
<td>NR 350 Sustainable Communities (4)</td>
<td>Developer: K. Townsend Target date: winter 2013</td>
<td>2 quarters</td>
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<tr>
<td>SUS 304 Sustainability Assessment (4)</td>
<td>Developer: K. Townsend Target date: summer 2013</td>
<td>2 quarters</td>
</tr>
<tr>
<td>SOIL 102 Intro to Environmental Science and Sustainability (lecture, 3)</td>
<td>Developer: K. Townsend Target date: spring 2013</td>
<td>4 quarters</td>
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Degree Requirements:
The curriculum for the BS in Sustainability Double-Degree program includes core, practicum and individualized study components. Courses from a student’s major course of study will not count towards Double-degree requirements. Completion of the Double-Degree will require 36 credits beyond the 180-credit minimum for graduation.

Sustainability Core:
Each course below is required for a total of 17-19 credits.

NR 350 (4) Sustainable Communities *(online course currently being developed winter 2013)*
SUS 304 (4) Sustainability Assessment *(online course to be developed in spring 2013)*
SUS 420 (3) Social Dimensions of Sustainability *(online course to be developed)* or SOC 480 (4) Environmental Sociology or SOC 481 (4) Society and Natural Resources or SOC 485 Consensus and Natural Resources (3) *(all available online)*
SUS 430 (3) Ecological Dimensions of Sustainability *(online course to be developed)* or SOIL 102 Introduction to Environmental Science and sustainability (4) *(online course currently being developed spring 2013)*
SUS 440 (3) Economic Dimensions of Sustainability *(online course to be developed)* or AREC/ECON 352 (3) Environmental Economics and Policy or AREC 434 (4) Measuring Resource and Environmental Impacts *(both available online)*

Sustainability Practicum:
SUS 410 (3) Sustainability Internship *(online course currently being developed)* or
SUS 499 (3) Sustainability Workshop / Service Learning *(online course currently being developed)*

The E-Campus advisor will work with all online Sustainability Double Degree students to choose or create an internship, workshop or service learning project required to complete the degree.
Elective courses:

Students will also work with their Academic Advisor /Sustainability Advisor to select electives in the theme relevant to their interests for a total of **14 -16 credits.** Courses that are currently available online are shown in bold. More classes are being added to the online portfolio every term, and so this list will be updated regularly.

**Business**

BA 302 BUSINESS PROCESS MANAGEMENT (4) *(pre-req MTH 245 or MTH 251)*

BA 351 MANAGING ORGANIZATIONS (4) online

BA 352 MANAGING INDIVIDUAL AND TEAM PERFORMANCE *(pre-req COMM 111 or COMM 114)*

BA 362 SOCIAL ENTREPRENEURSHIP AND SOCIAL INITIATIVES (4)

BA 452 LEADERSHIP (4) *(pre-req BA 351 or BA 352)*

BA 465 SYSTEMS THINKING AND PRACTICE (4)

BA 466 INTEGRATIVE STRATEGIC EXPERIENCE (4) *(pre-reqs BA 340 or BA 360 AND BA 352 AND BA 357 and BA 390 or senior standing)*

ECON 202 INTRODUCTION TO MACROECONOMICS (4) *(pre-reqs MTH 111 or equivalent)* online

ECON 315 INTERMEDIATE MACROECONOMIC THEORY *(pre-reqs ECON 201, ECON 202)* online

AREC 250 INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY (3) online

AREC 351 NATURAL RESOURCE ECONOMICS AND POLICY *(pre-req AREC 250 or ECON 201, MTH 111)* online

AREC 352 ENVIRONMENTAL ECONOMICS AND POLICY *(pre-req ECON 201)* online

AREC 434 MEASURING RESOURCE AND ENVIRONMENTAL IMPACTS (4) *(AREC 311 and AREC 312)* online

**Engineering**

BEE 221 FUNDAMENTALS OF ECOLOGICAL ENGINEERING (3)

BEE 320 BIOSYSTEMS ANALYSIS AND MODELING (3) *(pre-req MTH 256)*

BEE 322 ECOLOGICAL ENGINEERING THERMODYNAMICS AND TRANSFER PROCESS (4) *(pre-req BEE 320)*

CCE 422 GREEN BUILDING MATERIALS (3) *(pre-reqs CCE 321 AND ECON 201/202 AND ST 314)*

ECE 438 ELECTRIC AND HYBRID VEHICLES (4) *(pre-reqs ENGR 202 AND ENGR 212)*

CHE 450 CONVENTIONAL AND ALTERNATIVE ENERGY SYSTEMS (3)

CHE 451 SOLAR PV AND SOLAR THERMAL *(pre-req CHE 311)*

ENGR 350 SUSTAINABLE ENGINEERING (3)

ENVE 321 ENVIRONMENTAL ENGINEERING FUNDAMENTALS (4) *(pre-req MTH 256)*

ME 312 THERMODYNAMICS (4) *(pre-reqs MTH 256 AND ME 311)*

**Natural Sciences**

ATS 320 THE CHANGING CLIMATE (3) online

BI 301 HUMAN IMPACTS ON ECOSYSTEMS (3)

BI 306 ENVIRONMENTAL ECOLOGY (3)

BI 349 BIODIVERSITY—CAUSES, CONSEQUENCES AND CONSERVATION (3) online

BI 370 ECOLOGY *(pre-reqs BI 211 and BI 212 and BI 213)* online

BI 435 GENES AND CHEMICALS IN AGRICULTURE: VALUE AND RISK (3) online

CH 374 TECHNOLOGY, ENERGY, AND RISK (3) online
CH 390 ENVIRONMENTAL CHEMISTRY (3) (pre-req CH 331) online
FOR 341 FOREST ECOLOGY (3) online
FOR 355 MANAGEMENT FOR MULTIPLE RESOURCE VALUES (3) online
FOR 360 COLLABORATION AND CONFLICT MANAGEMENT (3) online
FOR 365 ISSUES IN NATURAL RESOURCES CONSERVATION (3) online
FOR 445 ECOLOGICAL RESTORATION (4) (pre-req BI 370 or instructor approval) online
FOR 455 URBAN FOREST PLANNING, POLICY AND MANAGEMENT (4) (pre-req FOR 350) online
FOR 462 NATURAL RESOURCE POLICY AND LAW (3)
FW 251 PRINCIPLES OF FISH AND WILDLIFE CONSERVATION (3) online
FW 303 SURVEY OF GEOGRAPHIC INFORMATION SYSTEMS IN NATURAL RESOURCES (3) online
FW 321 APPLIED COMMUNITY AND ECOSYSTEM ECOLOGY (3) (pre-req FW 320) online
FW 325 GLOBAL CRISSES IN RESOURCE ECOLOGY (3) online
FW 326 INTEGRATED WATERSHED MANAGEMENT (3) (pre-req FW 251) online
FW 340 MULTICULTURAL PERSPECTIVES IN NATURAL RESOURCES (3) online
FW 350 ENDANGERED SPECIES, SOCIETY AND SUSTAINABILITY (3) (pre-req FW 251) online
FW 435 WILDLIFE IN AGRICULTURAL ECOSYSTEMS (3) (pre-reqs BI 370 and FW 251) online
FW 485 CONSENSUS AND NATURAL RESOURCES (3) online
FW 488 PROBLEM SOLVING IN FISHERIES AND WILDLIFE SCIENCE (3) (pre-reqs FW 320 and FW 321 and 400 level FW coursework) online
FW 489 EFFECTIVE COMMUNICATIONS IN FISHERIES AND WILDLIFE SCIENCE (3) (pre-req FW 488) online
GEO 300 SUSTAINABILITY FOR THE COMMON GOOD (3) online
GEO 306 MINERALS, ENERGY, WATER AND THE ENVIRONMENT (3) online
GEO 309 ENVIRONMENTAL JUSTICE (3) (pre-req WR 121 and sophomore standing) online
GEO 324 GEOGRAPHY OF LIFE: SPECIES DISTRIBUTIONS AND CONSERVATION (4)
GEO 330 GEOGRAPHY OF INTERNATIONAL DEVELOPMENT AND GLOBALIZATION (3) (GEO 105 or GEO 106 or instructor approval)
GEO 350 POPULATION GEOGRAPHY (3) online
GEO 365 INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS (4) (pre-req GEO 301 or GEO 360) online
GEO 420 GEOGRAPHY OF RESOURCE USE (3) (pre-req 9 credits of upper division geography)
GEO 424 INTERNATIONAL WATER RESOURCES MANAGEMENT (3) (pre-req 9 credits of upper division geography) online
GEO 426 THIRD-WORLD RESOURCE DEVELOPMENT (3)
GEO 423 LAND USE IN THE AMERICAN WEST (3) online
GEO 451 ENVIRONMENTAL SITE PLANNING (3)
GEO 452 PRINCIPLES AND PRACTICES OF RURAL SITE PLANNING (3) (pre-req GEO 423 or GEO 523)
GEO 453 RESOURCE EVALUATION METHODS/EIS (3) (pre-req GEO 451)
PH 313 ENERGY ALTERNATIVES (3) (upper division standing and 12 credits of science)
SOIL/GEO 335 INTRODUCTION TO WATER SCIENCE AND POLICY (3) online
SOIL 375 SOIL RESOURCE POTENTIALS (3) (pre-req CSS 205)
SOIL 499 ST/ORGANIC FARMING (1-16) online
Z 348 HUMAN ECOLOGY (3)
Z 349 BIODIVERSITY: CAUSES, CONSEQUENCES, AND CONSERVATION (3) online
Social Sciences/Humanities
ANTH 481 NATURAL RESOURCES AND COMMUNITY VALUES (3) (pre-req 3 credits of social science) online
AREC 250 INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY (3) (pre-req MTH 111) online
AREC 253 ENVIRONMENTAL LAW, POLICY AND ECONOMICS (4) online
AREC 351 NATURAL RESOURCE ECONOMICS AND POLICY (3) (pre-req AREC 250 or ECON 201 and MTH 111) online
AREC 352 ENVIRONMENTAL ECONOMICS AND POLICY (3) (pre-req ECON 201) online
AREC 434 MEASURING RESOURCE AND ENVIRONMENTAL IMPACTS (4) (AREC 311 and AREC 312) online
COMM 408 WORKSHOP (3)
COMM 440 THEORIES OF CONFLICT AND CONFLICT MANAGEMENT (3) (pre-req COMM 321 or instructor approval)
COMM 442 BARGAINING AND NEGOTIATION PROCESSES (pre-req COMM 321 or instructor approval)
ENG 482 STUDIES IN AMERICAN LITERATURE, CULTURE AND THE ENVIRONMENT (4)
PHL 325 SCIENTIFIC REASONING (4) online
PHL 390 MORAL THEORIES (3) (pre-req PHL 205)
PHL 439 PHILOSOPHY OF NATURE (3) (admission by application)
PHL 440 ENVIRONMENTAL ETHICS (3) (pre-req PHL 205, PHL 342, PHL 365 or 6 credit hours of Philosophy) online
PHL 443 WORLD VIEWS AND ENVIRONMENTAL VALUES (3) online
PS 331 STATE AND LOCAL GOVERNMENT AND POLITICS (4) online
PS 370 SCIENCE, RELIGION AND POLITICS (4) online
PS 449 TOPICS: COMPARATIVE ENVIRONMENTAL POLITICS AND POLICY (3) online
PS 452 ALTERNATIVE INTERNATIONAL FUTURES (4) (pre-req PS 205)
PS 461 ENVIRONMENTAL POLITICAL THEORY (4)
PS 474 NATURAL RESOURCE POLICY AND BUREAUCRATIC POLITICS (4) (pre-req PS 201 or 6 credits upper division NR) online
PS 475 ENVIRONMENTAL POLITICS AND POLICY (4) (pre-req PS 201 or instructor approval) online
PS 477 INTERNATIONAL ENVIRONMENTAL POLITICS AND POLICY (4) online
SOC 360 POPULATION TRENDS AND POLICY (4) (pre-req SOC 204) online
SOC 480 ENVIRONMENT SOCIOLOGY (4) (pre-req SOC 204) online
SOC 481 SOCIETY AND NATURAL RESOURCES (4) (pre-req SOC 204) online
SOC 485 CONSENSUS AND NATURAL RESOURCES (3) online

Timetable
The distance version of the BS in Sustainability Double Degree program will be ready to launch in the Fall of AY 2013 after three additional core courses are developed (NR350, SUS304, SOIL102 with lab). By the end of AY 2013 these courses will be offered and the Sustainability Double Degree will be fully available online.
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<thead>
<tr>
<th>Faculty:</th>
<th>Rank:</th>
<th>Affiliation:</th>
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<tbody>
<tr>
<td>Kate Lajtha</td>
<td>Tenured Professor</td>
<td>Crop and Soil Science</td>
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<tr>
<td>Julie Elston</td>
<td>Tenured Professor</td>
<td>Business</td>
</tr>
<tr>
<td>Dreg Lindberg</td>
<td>Tenured Professor</td>
<td>Forestry</td>
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<tr>
<td>Matt Shinderman</td>
<td>Instructor</td>
<td>Forestry</td>
</tr>
<tr>
<td>Marla Hacker</td>
<td>Tenured Professor</td>
<td>Business</td>
</tr>
<tr>
<td>Natalie Dollar</td>
<td>Tenured Professor</td>
<td>Business</td>
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**Assessment**

Upon completion of this BS in sustainability Double-Degree program students should have the ability to:

- Define sustainability and identify at least 5 current barriers to creating a sustainable community;
- Create a Life Cycle Assessment for a material product;
- Recognize and apply concepts and theories of population biology to interdisciplinary fields such as conservation ecology;
- Apply principles of evolutionary dynamics and ecosystem biogeochemistry to understand and predict effects of pollutants such as heavy metals, pesticides, or acid rain on ecosystems;
- Effectively debate and evaluate scientific arguments behind such diverse fields as genetically modified organisms (GMOs) or organic vs. conventional farming;
- Interpret data critically, and understand uncertainty in scientific data and model prediction in such diverse fields as nitrogen saturation and global climate change;
- Calculate carbon footprint and water footprint of human activities;
- Develop an awareness of the responsibilities of professional scientists.

Students will have the opportunity to write answers to questions that explore these topics in SOIL 102. The topics are approached from different angles in most of the more advanced classes, and students will be asked to reflect on these topics during their internship/service learning experience. As part of their final project for that experience, they will be asked again to write about these topics. Assessment of pre-and post-program responses will be made and archived.