



# CREATING AND CHANGING UNDERGRADUATE ACADEMIC PROGRAMS

JUN 16 2014

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<b>College/Campus</b> UW Tacoma	<b>Department/Unit</b> IAS	<b>Date</b> 5/6/14
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### New Programs

- Leading to a Bachelor of \_\_\_\_\_ in \_\_\_\_\_ degree.
- Leading to a Bachelor of \_\_\_\_\_ degree with a major in \_\_\_\_\_.
- X Leading to a Biology and Geosciences Option within the existing major in Environmental Science.
- Leading to a minor in \_\_\_\_\_

### Changes to Existing Programs

- New Admission Requirements for the Major in \_\_\_\_\_ within the Bachelor of \_\_\_\_\_.
- Revised Admission Requirements for the Major in \_\_\_\_\_ within the Bachelor of \_\_\_\_\_.
- X Revised Program Requirements for the Major in Environmental Science within the Bachelor of Sciences.
- Revised Requirements for the Option in \_\_\_\_\_ within the major in \_\_\_\_\_.
- Revised Requirements for the Minor in \_\_\_\_\_.

### Other Changes

- Change name of program from \_\_\_\_\_ to \_\_\_\_\_.
- Change delivery method or location of program.
- New or Revised Continuation Policy for \_\_\_\_\_.
- New Honors Requirements for \_\_\_\_\_.
- Eliminate program in \_\_\_\_\_.

Proposed Effective Date: **Quarter:**  Autumn x Winter  Spring  Summer Year: 2015

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### EXPLANATION OF AND RATIONALE FOR PROPOSED CHANGE

For new program, please include any relevant supporting documentation such as student learning outcomes, projected enrollments, letters of support and departmental handouts. *(Use additional pages if necessary).*

This is a proposal to make two changes to the existing Environmental Science major within IAS. 1. To convert two existing "tracks" into "options", and 2. To update the capstone options. In addition, we are submitting revised the course catalog copy that eliminates long elective lists from the catalog and instead refers to the major webpage, which is updated more frequently.

#### 1. Converting Existing Tracks to Options

The rationale for converting existing tracks into options is that the current tracks are not officially recorded in DARS, nor are they listed on transcripts. This does not serve students, who cannot document their more focused coursework in their major, and it does not serve the major, since there is currently no way to determine how many students are in each track (in the Enterprise Data Warehouse, for example). For the two existing tracks, we are proposing a conversion from tracks to options with no changes to the curriculum.

#### 2. Updating List of Capstone Options

As the major has grown, the number of options for students to fulfill their capstone requirements has expanded. Currently, only three capstone options are listed in DARS (TESC 464, TESC 496, and TESC 499), although there are more options available (TESC 301, TESC 495, TESC 497, T GIS 415). Adding these options to DARS requires curriculum approval. (See Addendum 2).

**OTHER DEPARTMENTS AFFECTED**

List all departments/units/ or co-accredited programs affected by your new program or changes to your existing program and acquire the signature of the chair/director of each department/unit listed. Attach additional page(s) if necessary. \*See online instructions.

Department/Unit:	Chair/Program Director:	Date:
Department/Unit:	Chair/Program Director:	Date:

**CATALOG COPY**

Catalog Copy as currently written. Include only sections/paragraphs that would be changed if your request is approved. Please cross out or otherwise highlight any deletions.

Course work and independent study will allow students to develop the tools needed for scientific research, technical writing and grant preparation. Students are prepared to begin working in the sciences or continue their education upon graduation through a culminating capstone experience that gives students the opportunity to work with a scientist on their own undergraduate research project or to intern with a community group to gain practical experience.

Students have the option of completing a biology or a geoscience track within the BS in Environmental Science degree. See page 90 for details.

- 29 credits minimum — five additional TESC courses to include at least one biological science (B) course and one physical science (P) course. Of these remaining five courses, at least two must be laboratory (L) courses (6 credits) and one must be a field (F) course (7 credits). Some courses designated as labs on this list are not offered as labs every time; check the Time Schedule for credits.

Note: If a course below is taken to fulfill prerequisite courses, it is an elective. TESC 100, 107, 110, 111 and 213 are electives for the B.S. degree.

TESC 202 Plant Biology and Ecology (B)

TESC 211 The Science of Environmental Sustainability (P)

TESC 215 Meteorology (P, if 6 cr L)

TESC 227 Earth History (P)

TESC 232 Issues in Biological Conservation (B)

TESC 236 Plants and People: The Science of Agriculture (B)

TESC 238 Human Interactions with Marine Invertebrates (B)

TESC 239 Energy and the Environment (P)

TESC 240 Human Biology and Environmental Interactions

TESC 241 Oceanography (P, if 6 cr L)

TESC 243 Geography of the Physical Environment (P)

TESC 247 Maritime History and Science in the Pacific Northwest (P)

TESC 251 Organic Chemistry I (P)

TESC 302 Ecology of Mt. St. Helens (B/P/F)

TESC 303 Sustainable Development in Africa—Study Abroad (B,P,F)

TESC 304 Tropical Ecology and Sustainability (B)

TESC 315 Applied Physics with Environmental Applications (P/L)

TESC 316 Pacific NW Geology (P)

TESC 317 Geology, Landscape and Culture (Field course to England) (P/F)

TESC 318 Biogeography (P/B, if 6 cr L)

TESC 319 Water Quality Concepts and Watershed Studies (P/L)

TESC 321 Soils and Environmental Applications (P)

TESC 326 Pacific NW Geology Field Trip (If TESC 316 taken; P,L)

TESC 332 Conservation Biology in Practice (B/L)

TESC 337 Environmental Geology (P/L)

TESC 341 Climate Change (P)

TESC 343 The Atmosphere and Air Pollution (P/L)

TESC 345 Pollution and Public Policy (P)

TESC 349 Research at Sea (P/B/F)

TESC 362 Introduction to Restoration Ecology (B/F)

TESC 370 Genetics and Society (B)

TESC 378 Environmental Microbiology (B/L)

TESC 402 History and Ecology of Biological Invasions (B)

TESC 404 Costa Rica Field Studies: Ecology and Community (B/F)

TESC 405 Introduction to Biochemistry (if 6 credits, P)

TESC 408 Marine Plankton (B/L)

TESC 415 Sedimentology (P/L)

~~TESC 417 Field Geology (P/F)~~  
~~TESC 422 Evolution (B, if 6 cr-L)~~  
~~TESC 426 Ecological History Field Studies (B,P,F)~~  
~~TESC 430 Environmental Modeling (B/P/L)~~  
~~TESC 431 Water Resources and Pollution (P/F)~~  
~~TESC 432 Forest Ecology (B/F)~~  
~~TESC 433 Pollutant Fate and Transport (P/L)~~  
~~TESC 434 Biology, History/ Politics of Salmon in the Pacific NW (B, if 6 cr-L)~~  
~~TESC 435 Limnology (P/F)~~  
~~TESC 437 Stream Ecology (P/L)~~  
~~TESC 438 Environmental Biology: Marine Invertebrates (B/L)~~  
~~TESC 439 Analytical Chemistry with Environmental Applications (P,L)~~  
~~TESC 440 Environmental Entomology (B/L)~~  
~~TESC 442 Marine Ecology (B/F)~~  
~~TESC 445 Estuarine Field Studies (B/P/F)~~  
~~TESC 452 Plants, Insects and their Interactions (B/F)~~  
~~TESC 490 Special Topics: Ecological History Field Studies (B/F)~~  
~~T GIS 311 Maps and GIS (P/L)~~  
~~TMATH 310 Statistics for Environmental Applications (B,P)~~  
~~TMATH 390 Probability and Statistics in Engineering and Science~~

- 5 credits: Environmental Law/Policy course (~~TECON 421 does not count~~)

~~TEST 333 Environmental Policy Application and Compliance~~  
~~TEST 335 Environmental Impact Analysis~~  
~~TPOLS 438 Environmental Law~~  
~~TPOLS 439 Washington State Environmental Law~~

- 5 credits: Environmental Ethics course

~~T PHIL 363 Philosophical Perspectives on the Environment~~  
~~T PHIL 364 Topics in the Philosophy of Science~~  
~~T PHIL 456 Environmental Ethics~~  
~~TRELIG 350 Philosophy, Religion and the Environment~~

- 5 credits: Social Science/environmental focus

~~T ANTH 418 Interpreting Enigmatic India~~  
~~T ANTH 464 Native American Cultural Areas~~  
~~TCOM 310 Contemporary Environmental issues and the Media~~  
~~TCOM 351 Video Production~~  
~~TCOM 470 Documentary Production and Critique~~  
~~TECON 421 Environmental Policy~~  
~~TESC 407 Geohazards and Natural Disasters~~  
~~TESC 304 Tropical Ecology and Sustainability~~  
~~TESC 318 Biogeography~~  
~~TEST 211 Women in Science~~  
~~TEST 221 Environmental History: Water~~  
~~TEST 332 A Natural History of Garbage~~  
~~T GEOG 403 Geography of the USA and Canada~~  
~~T GEOG 435 Contemporary Geopolitics~~  
~~T GEOG 440 Political Geography~~  
~~T GH 303 Global Challenges~~  
~~T HIST 445 History of Tacoma~~  
~~T HIST 456 North American Regions~~  
~~T HIST 487 Technology in the Modern World~~  
~~T HIST 488 Urbanization and the Environment~~  
~~T HIST 490 Medieval Technology~~  
~~T HIST 495 The Metropolis~~  
~~T HLTH 410 Environmental Justice~~  
~~T HLTH 472 Human Health and the Environment~~  
~~TIAS 443 Ethnicity and the Urban Landscape~~

T INST 401 Technology in Service of Global Society  
T NPRET 431 Community Organizations in the Nonprofit Sector  
T NPRET 451 Essentials of Grant Writing and Fundraising  
T POL S 326 Modern Brazil  
T POL S 342 Third World Cities  
T POL S 435 Popular Movements in Latin America  
T SOC 436 Rural Societies and Development  
T SUD 240 The City and Nature  
T SUD 323 Sustainable Urban Development Policies  
T SUD 445 Urban Ecology  
T URB 205 Images of the City  
T URB 210 Urban Society and Culture  
T URB 220 Introduction to Urban Planning  
T URB 301 The Urban Condition  
T URB 312 Race and Poverty in Urban America  
T URB 321 History of Planning, Theory and Practice  
T URB 322 Land Use Planning  
T URB 326 Climate Change within the Urban Context  
T URB 330 City Worlds  
T URB 345 Urban Government and Organizations  
T URB 410 Environmental Equity  
T URB 450 Planning for Sustainability

• 5 credits: Humanities course/environmental focus:

T ANTH 464 Native American Cultural Areas  
T ARTS 402 Eco-Art: Art in Response to Environmental Crisis  
T ARTS 284 Art and Culture of the Pacific  
T HIST 379 Modern Architecture  
T HIST 226 American Architecture  
T LIT 437 Nature and the Environment in American Literature  
T LIT 431 Contemporary Native American Women's Literature  
T GH 303 Global Challenges  
T PHIL 235 Religion in the Modern World  
T PHIL 353 The End of the Modern World, 1600-2000  
T PHIL 361 Ethics in Contemporary Society  
T PHIL 362 The Beautiful and the Good: Philosophy's Quest for Value  
T PHIL 363 Philosophical Perspectives on the Environment  
T PHIL 364 Topics in the Philosophy of Sciences  
T PHIL 367 Utopias  
T PHIL 451 The Enlightenment  
T PHIL 455 Medicine and Morality: Biomedical Ethics  
T PHIL 458 Ways of Knowing  
T RELIG 367 East Asian Religions: Zen and Taoism  
T RELIG 463 God: East and West  
T WRT 211 Argument and Research in Writing  
T WRT 201 Technical Communication in the Workplace  
T WRT 331 Advanced Disciplinary Writing: Natural Sciences  
T WRT 387 Creative Nonfiction Writing  
T WRT 431 Writing for Social Change

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## **Graduation Requirements for BS in Environmental Science with the Biology Track**

To be eligible for graduation with a bachelor of science in environmental science, students must meet the UW-Tacoma scholastic standards (2.0 UW GPA), credits required (minimum 180), and the final-year residency requirement and complete the following program requirements:

• Complete a minimum of 45 credits of upper-division course work and a minimum of 45 credits in

~~Interdisciplinary Arts and Sciences:~~

- ~~• Complete all general education requirements not met with transfer courses. See advisor for details.~~
- ~~• Complete the B.S. degree preparatory courses and requirements (above). Minors and certificates are optional. No more than 15 elective credits can be taken for a Satisfactory/Not Satisfactory grade; see advisor for details.~~
- ~~• Complete five credits of English composition with a minimum grade of 2.0.~~
- ~~• Complete at least 45 of last 60 credits in residence at the University of Washington Tacoma.~~
- ~~• Meet with a program advisor to complete a graduation application no later than the second week of the quarter in which the student plans to graduate.~~
- ~~• 6 credits: two required "bookend" courses-~~

~~TESC 310 Environmental Research Seminar (3) To be taken in the first quarter of enrollment (sophomore or junior year)-~~

~~TESC 410 Environmental Science Senior Seminar (3) To be taken in the last quarter of enrollment after or concurrent with capstone experience~~

- ~~• 3-10 credits: Capstone experience (internship, research, etc.) Planned with faculty advisor; may span more than one quarter.-~~

- ~~• 12 credits: Environmental science core courses:-~~

~~TESC 333 Environmental Chemistry (6)-~~

~~TESC 340 Ecology and Its Applications (6)-~~

- ~~• Five additional TESC courses to include one physical science (P), at least two labs (L) courses (TESC 380 and one more from List A or B) and one field (F) course-~~

~~TESC 100/300, 107/317, 110, 111 and 213/313 not allowed.~~

~~TESC 380 Molecular Biology (L)~~

~~Three courses from List A or B (at least one course from each):~~

~~List A: Organismal, Molecular, Genetics-~~

~~TESC 240 Human Biology and Environmental Interactions~~

~~TESC 370 Genetics and Society~~

~~TESC 378 Environmental Microbiology (L)~~

~~TESC 405 Introduction to Biochemistry I (P)~~

~~TESC 408 Marine Plankton (L)~~

~~TESC 422 Evolution~~

~~TESC 438 Environmental Biology: Marine Invertebrates (L)~~

~~TESC 440 Environmental Entomology (L)~~

~~List B: Ecology, Conservation Biology-~~

~~TESC 202 Plant Biology and Ecology~~

~~TESC 232 Issues in Biological Conservation~~

~~TESC 236 Plants and People: The Science of Agriculture~~

~~TESC 304 Tropical Ecology and Sustainability~~

~~TESC 332 Conservation Biology in Practice (L)~~

~~TESC 362 Introduction to Restoration Ecology (F)~~

~~TESC 402 History and Ecology of Biological Invasions~~

~~TESC 404 Neotropical Field Studies: Ecology and Community (F)~~

~~TESC 432 Forest Ecology (F)~~

~~TESC 442 Marine Ecology (F)~~

~~TESC 434 Biology, History/ Politics of Salmon in the Pacific~~

~~TESC 437 Stream Ecology (P,L)~~

~~TESC 452 Plants, Insects and their Interactions (F)~~

~~TESC 430 Environmental Modeling (P)~~

~~TMATH 310 Statistics for Environmental Applications (P)~~

~~One additional course from lists A-C to complete this portion of the degree requirements.~~

~~List C-~~

~~TESC 211 The Science of Environmental Sustainability (P)~~

~~TESC 215 Meteorology (P/if 6 cr-L)~~

~~TESC 227 Earth History (P)~~

~~TESC 238 Human Interactions with Marine Invertebrates (B)~~

~~TESC 239 Energy and the Environment (P)~~  
~~TESC 241 Oceanography (P/if 6 cr-L)~~  
~~TESC 243 Geography of the Physical Environment (P)~~  
~~TESC 247 Maritime History and Science in the Pacific Northwest (P)~~  
~~TESC 302 Ecology of Mt. St. Helens (B/P/F)~~  
~~TESC 303 Sustainable Development in Africa (B/P/F)~~  
~~TESC 315 Applied Physics with Environmental Applications (P/L)~~  
~~TESC 316 Pacific Northwest Geology (P)~~  
~~TESC 317 Geology, Landscape and Culture (England) (P/F)~~  
~~TESC 318 Biogeography (P/B, if 6 cr-L)~~  
~~TESC 319 Water Quality Concepts and Watershed Studies (P/L)~~  
~~TESC 321 Soils and Environmental Applications (P)~~  
~~TESC 326 Pacific Northwest Geology Field Trip (P/if 316 taken, then L)~~  
~~TESC 337 Environmental Geology (P/L)~~  
~~TESC 341 Climate Change (P)~~  
~~TESC 343 The Atmosphere and Air Pollution (P/L)~~  
~~TESC 345 Pollution and Public Policy (P)~~  
~~TESC 349 Research at SEA (P/B/F)~~  
~~TESC 415 Sedimentology (P/L)~~  
~~TESC 417 Field Geology (P/F)~~  
~~TESC 426 Ecological History Field Studies (B/F)~~  
~~TESC 431 Water Resources and Pollution (P/F)~~  
~~TESC 433 Pollutant Fate and Transport (P/L)~~  
~~TESC 435 Limnology (P/F)~~  
~~TESC 439 Analytic Chemistry with Environmental Application (P/L)~~  
~~TESC 445 Estuarine Field Studies (B/P/F)~~  
~~T GIS 311 Maps and GIS (P/L)~~

• 5 credits: Environmental Law/Policy course (TECON 421 does not count)

~~TEST 333 Environmental Policy Application and Compliance~~  
~~TEST 335 Environmental Impact Analysis~~  
~~T POL S 438 Environmental Law~~  
~~T POL S 439 Washington Environmental Law~~

• 5 credits: Environmental Ethics course

~~T PHIL 363 Philosophical Perspectives on the Environment~~  
~~T PHIL 364 Topics in the Philosophy of Science~~  
~~T PHIL 456 Environmental Ethics~~

• 5 credits: Social Science/environmental focus

~~T ANTH 418 Interpreting Enigmatic India~~  
~~T ANTH 464 Native American Cultural Areas~~  
~~T COM 310 Contemporary Environmental issues and the Media~~  
~~T COM 351 Video Production~~  
~~T COM 470 Documentary Production and Critique~~  
~~TECON 421 Environmental Policy~~  
~~TESC 304 Tropical Ecology and Sustainability~~  
~~TESC 318 Biogeography~~  
~~TEST 211 Women in Science~~  
~~TEST 221 Environmental History: Water~~  
~~TEST 332 A Natural History of Garbage~~  
~~T GEOG 403 Geography of the USA and Canada~~  
~~T GEOG 435 Contemporary Geopolitics~~  
~~T GEOG 440 Political Geography~~  
~~T GH 303 Global Challenges~~  
~~T HIST 445 History of Tacoma~~  
~~T HIST 456 North American Regions~~  
~~T HIST 487 Technology in the Modern World~~  
~~T HIST 488 Urbanization and the Environment~~

T HIST 490 Medieval Technology  
 T HIST 495 The Metropolis  
 T HLTH 410 Environmental Equity  
 T HLTH 472 Human Health and the Environment  
 T IAS 443 Ethnicity and the Urban Landscape  
 T INST 401 Technology in Service of Global Society  
 T NPRFT 431 Community Organizations in the Nonprofit Sector  
 T NPRFT 451 Essentials of Grant Writing and Fundraising  
 T POL S 326 Modern Brazil  
 T POL S 342 Third World Cities  
 T POL S 435 Popular Movements in Latin America  
 T SOC 436 Rural Societies and Development  
 T SUD 222 Introduction to Sustainability  
 T SUD 240 The City and Nature  
 T SUD 323 Sustainable Urban Development Policies  
 T SUD 445 Urban Ecology  
 T URB 205 Images of the City  
 T URB 210 Urban Society and Culture  
 T URB 220 Introduction to Urban Planning  
 T URB 301 The Urban Condition  
 T URB 312 Race and Poverty in Urban America  
 T URB 321 History of Planning, Theory and Practice  
 T URB 322 Land-Use Planning  
 T URB 326 Climate Change within the Urban Context  
 T URB 330 City Worlds  
 T URB 345 Urban Government and Organizations  
 T URB 410 Environmental Equity  
 T URB 450 Planning for Sustainability

• 5 credits: Humanities course/environmental focus:

T ANTH 464 Native American Cultural Areas  
 T ARTS 402 Eco-Art: Art in Response to Environmental Crisis  
 T ARTS 284 Art and Culture of the Pacific  
 T GH 303 Global Challenges  
 T HIST 370 Modern Architecture  
 T HIST 226 American Architecture  
 T LIT 437 Nature and the Environment in American Literature  
 T LIT 431 Contemporary Native American Women's Literature  
 T PHIL 235 Religion in the Modern World  
 T PHIL 353 The End of the Modern World, 1600-2000  
 T PHIL 361 Ethics in Contemporary Society  
 T PHIL 362 The Beautiful and the Good: Philosophy's Quest for Value  
 T PHIL 363 Philosophical Perspectives on the Environment  
 T PHIL 364 Topics in the Philosophy of Sciences  
 T PHIL 367 Utopias  
 T PHIL 451 The Enlightenment  
 T PHIL 455 Medicine and Morality: Biomedical Ethics  
 T PHIL 458 Ways of Knowing  
 T RELIG 367 East Asian Religions: Zen and Taoism  
 T RELIG 463 God: East and West  
 T WRT 211 Argument and Research in Writing  
 T WRT 291 Technical Communication in the Workplace  
 T WRT 331 Advanced Disciplinary Writing: Natural Sciences  
 T WRT 387 Creative Nonfiction Writing  
 T WRT 431 Writing for Social Change

**Graduation Requirements for BS in Environmental Science with the Geosciences Track**



To be eligible for graduation with a bachelor of science in environmental science, students must meet the UW-Tacoma scholastic standards (2.0 UW GPA), credits required (minimum 180), and the final-year residency requirement and complete the following program requirements:

- Complete a minimum of 45 credits of upper-division course work and a minimum of 45 credits in Interdisciplinary Arts and Sciences.
- Complete all general education requirements not met with transfer courses. See advisor for details.
- Complete the B.S. degree preparatory courses and requirements (above). Minors and certificates are optional. No more than 15 elective credits can be taken for a Satisfactory/Not-Satisfactory grade; see advisor for details.
- Complete five credits of English composition with a minimum grade of 2.0.
- Complete at least 45 of last 60 credits in residence at the University of Washington Tacoma.
- Meet with a program advisor to complete a graduation application no later than the second week of the quarter in which the student plans to graduate.
- 6 credits: two required "bookend" courses:  
TESC 310 Environmental Research Seminar (3) To be taken in the first quarter of enrollment (sophomore or junior year)  
TESC 410 Environmental Science Senior Seminar (3) To be taken in the last quarter of enrollment after or concurrent with capstone experience
- 3-10 credits: Capstone experience (internship, research, etc.) Planned with faculty advisor; may span more than one quarter.
- 12 credits: Environmental science core courses:  
TESC 333 Environmental Chemistry (6)  
TESC 340 Ecology and Its Applications (6)
- Five additional TESC courses to include one biological science (B) at least two lab (L) courses (TESC 337 and one more from List G or H) and one field (F) course. TESC 100/300, 107/317, 110, 111 and 213/313 not allowed.

TESC 337 Environmental Geology (L)

Three courses from List G:

TESC 215 Meteorology

TESC 227 Earth History

TESC 230 Energy and the Environment

TESC 241 Oceanography (L)

TESC 243 Geography of the Physical Environment

TESC 247 Maritime History and Science in the Pacific Northwest

TESC 315 Applied Physics with Environmental Applications (L)

TESC 316 Pacific Northwest Geology + {TESC 326 PNW Geology Field Trip (L)}

TESC 317 Geology, Landscape, and Culture (F)

TESC 319 Water Quality Concepts and Watershed Studies (L)

TESC 321 Soils and Environmental Applications

TESC 341 Climate Change

TESC 343 The Atmosphere and Air Pollution (L)

TESC 415 Sedimentology (L)

TESC 417 Field Geology (F)

TESC 430 Environmental Modeling (B)

TESC 433 Pollutant Fate and Transport in the Environment (L)

TESC 435 Limnology (F)

TESC 437 Stream Ecology (L)

TESC 445 Estuarine Field Studies (F)

TGIS 311 Maps and GIS (L)

TMATH 310 Statistics for Environmental Applications (B)

One additional course from List G or H.

List H

~~TESC 202 Plant Biology and Ecology (B)~~  
~~TESC 211 The Science of Environmental Sustainability~~  
~~TESC 232 Issues in Biological Conservation (B)~~  
~~TESC 236 Plants and People: The Science of Agriculture (B)~~  
~~TESC 238 Human Interactions with Marine Invertebrates (B)~~  
~~TESC 240 Human Biology and Environmental Interactions (B)~~  
~~TESC 302 Ecology of Mt. St. Helens (B/F)~~  
~~TESC 303 Sustainable Development in Africa (B/F)~~  
~~TESC 304 Tropical Ecology and Sustainability (B)~~  
~~TESC 318 Biogeography (B, if 6-cr-L)~~  
~~TESC 332 Conservation Biology in Practice (B/L)~~  
~~TESC 345 Pollution and Public Policy~~  
~~TESC 349 Research at SEA (B/F)~~  
~~TESC 362 Introduction to Restoration Ecology (B/F)~~  
~~TESC 370 Genetics and Society (B)~~  
~~TESC 378 Environmental Microbiology (B/L)~~  
~~TESC 380 Molecular Biology (B/L)~~  
~~TESC 402 History and Ecology of Biological Invasions (B)~~  
~~TESC 404 Neotropical Field Studies: Ecology and Community (B/F)~~  
~~TESC 405 Introduction to Biochemistry I (if 6-cr, L)~~  
~~TESC 408 Marine Plankton (B/L)~~  
~~TESC 422 Evolution (B/if 6-cr-L)~~  
~~TESC 426 Ecological History Field Studies (B/F)~~  
~~TESC 431 Water Resources and Pollution (F)~~  
~~TESC 432 Forest Ecology (B/F)~~  
~~TESC 434 Biology, History/Politics of Salmon in the Pacific NW (B/if 6-cr-L)~~  
~~TESC 438 Environmental Biology: Marine Invertebrates (B/L)~~  
~~TESC 439 Analytic Chemistry with Environmental Application (L)~~  
~~TESC 440 Environmental Entomology (B/L)~~  
~~TESC 442 Marine Ecology (B/F)~~  
~~TESC 452 Plants, Insects and their Interactions (B/F)~~  
~~TESC 490 Special Topics: Ecological History Field Studies (B/F)~~  
~~TMATH 310 Statistics for Environmental Applications (B)~~

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● 5 credits: Environmental Law/Policy course (TECON 421 does not count)

~~TEST 333 Environmental Policy Application and Compliance~~  
~~TEST 335 Environmental Impact Analysis~~  
~~TPOL S 438 Environmental Law~~  
~~TPOL S 439 Washington Environmental Law~~

● 5 credits: Environmental Ethics course

~~T PHIL 363 Philosophical Perspectives on the Environment~~  
~~T PHIL 364 Topics in the Philosophy of Science~~  
~~T PHIL 456 Environmental Ethics~~

● 5 credits: Social Science/environmental focus

~~T ANTH 418 Interpreting Enigmatic India~~  
~~T ANTH 464 Native American Cultural Areas~~  
~~TCOM 310 Contemporary Environmental issues and the Media~~  
~~TCOM 351 Video Production~~  
~~TCOM 470 Documentary Production and Critique~~  
~~TECON 421 Environmental Policy~~  
~~TESC 304 Tropical Ecology and Sustainability~~  
~~TESC 318 Biogeography~~  
~~TEST 211 Women in Science~~  
~~TEST 221 Environmental History: Water~~  
~~TEST 332 A Natural History of Garbage~~  
~~T GEOG 403 Geography of the USA and Canada~~  
~~T GEOG 435 Contemporary Geopolitics~~

T-GEOG 440 Political Geography  
 T-GH 303 Global Challenges  
 T-HIST 445 History of Tacoma  
 T-HIST 456 North American Regions  
 T-HIST 487 Technology in the Modern World  
 T-HIST 488 Urbanization and the Environment  
 T-HIST 490 Medieval Technology  
 T-HIST 495 The Metropolis  
 T-HLTH 410 Environmental Equity  
 T-HLTH 472 Human Health and the Environment  
 T-IAS 443 Ethnicity and the Urban Landscape  
 T-INST 401 Technology in Service of Global Society  
 T-NPRFT 431 Community Organizations in the Nonprofit Sector  
 T-NPRFT 451 Essentials of Grant Writing and Fundraising  
 T-POL S 326 Modern Brazil  
 T-POL S 342 Third World Cities  
 T-POL S 435 Popular Movements in Latin America  
 T-SOC 436 Rural Societies and Development  
 T-SUD 222 Introduction to Sustainability  
 T-SUD 240 The City and Nature  
 T-SUD 323 Sustainable Urban Development Policies  
 T-SUD 445 Urban Ecology  
 T-URB 205 Images of the City  
 T-URB 210 Urban Society and Culture  
 T-URB 220 Introduction to Urban Planning  
 T-URB 301 The Urban Condition  
 T-URB 312 Race and Poverty in Urban America  
 T-URB 321 History of Planning, Theory and Practice  
 T-URB 322 Land Use Planning  
 T-URB 326 Climate Change within the Urban Context  
 T-URB 330 City Worlds  
 T-URB 345 Urban Government and Organizations  
 T-URB 410 Environmental Equity  
 T-URB 450 Planning for Sustainability

•— 5 credits: Humanities course/environmental focus:

T-ANTH 464 Native American Cultural Areas  
 T-ARTS 402 Eco-Art: Art in Response to Environmental Crisis  
 T-ARTS 284 Art and Culture of the Pacific  
 T-GH 303 Global Challenges  
 T-HIST 379 Modern Architecture  
 T-HIST 226 American Architecture  
 T-LIT 437 Nature and the Environment in American Literature  
 T-LIT 431 Contemporary Native American Women's Literature  
 T-PHIL 235 Religion in the Modern World  
 T-PHIL 353 The End of the Modern World, 1600-2000  
 T-PHIL 361 Ethics in Contemporary Society  
 T-PHIL 362 The Beautiful and the Good: Philosophy's Quest for Value  
 T-PHIL 363 Philosophical Perspectives on the Environment  
 T-PHIL 364 Topics In the Philosophy of Sciences  
 T-PHIL 367 Utopias  
 T-PHIL 451 The Enlightenment  
 T-PHIL 455 Medicine and Morality: Biomedical Ethics  
 T-PHIL 458 Ways of Knowing  
 T-RELIG 367 East Asian Religions: Zen and Taoism  
 T-RELIG 463 God: East and West  
 T-WRT 211 Argument and Research in Writing  
 T-WRT 291 Technical Communication in the Workplace  
 T-WRT 331 Advanced Disciplinary Writing: Natural Sciences

**PROPOSED CATALOG COPY**

Reflecting requested changes (Include exact wording as you wish it to be shown in the printed catalog. Please underline or otherwise highlight any additions. If needed, attach a separate, expanded version of the changes that might appear in department publications).  
**Please note:** all copy will be edited to reflect uniform style in the General Catalog.

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Course work and independent study will allow students to develop the tools needed for scientific research, technical writing and grant preparation. Students are prepared to begin working in the sciences or continue their education upon graduation through a culminating capstone experience that gives students the opportunity to gain independence and specialized skills through directed research, an internship, or project-based courses.

In addition to the standard environmental science BS degree, students may complete a biology or geoscience option in the degree. These options allow students to obtain an interdisciplinary environmental science BS degree, while demonstrating extra proficiency in one of these disciplines.

...

Meet with an academic advisor to complete a graduation application no later than the second week of the quarter in which the student plans to graduate.

**Required Courses**

- 6 credits: two required "bookend" courses: TESC 310 Environmental Research Seminar and TESC 410 Environmental Science Senior Seminar.

....

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- 12 credits: Environmental science core courses:  
TESC 333 Environmental Chemistry (6)  
TESC 340 Ecology and Its Applications (6)

**Elective Courses for Environmental Science Major**

- 5 credits: Environmental Law/Policy course
- 5 credits: Environmental Ethics or Philosophy course
- 5 credits: Social Science/Environmental focus course
- 5 credits: Humanities/Environmental focus course
- 29 credits minimum; Environmental Science courses

Five additional courses to include at least one biological science (B) course and one physical science (P) course. Of these remaining five courses, at least two must be laboratory (L) courses (6 credits) and one must be a field (F) course (7 credits).

Elective course lists can be found at <http://www.tacoma.uw.edu/interdisciplinary-arts-sciences/environmental->

**Elective Courses for Biology Option**

- 5 credits: Environmental Law/Policy course
- 5 credits: Environmental Ethics course
- 5 credits: Social Science/Environmental focus course
- 5 credits: Humanities/Environmental focus course
- 29 credits minimum: Environmental Science courses

Five additional courses to include one physical science (P), at least two lab (L) courses (TESC 380 and one more from List A or B) and one field (F) course.

For the biology option, Environmental Science courses must include:

- TESC 380 Molecular Biology (L)
- One course from List A
- One course from List B
- One course from List A or List B
- One course from List A, List B, or List C to complete this portion of the degree requirements

Biology option course lists can be found at <http://www.tacoma.uw.edu/interdisciplinary-arts-sciences/environmental-science-bs-degree-requirements>

**Elective Courses for Geosciences Option**

- 5 credits: Environmental Law/Policy course
- 5 credits: Environmental Ethics course
- 5 credits: Social Science/Environmental focus course
- 5 credits: Humanities/Environmental focus course
- 29 credits minimum: Environmental Science courses

Five additional courses to include one biological science (B) at least two lab (L) courses (TESC 337 and one more from List D or E) and one field (F) course.

For the geosciences option, Environmental Science courses must include:

- TESC 337 Environmental Geology (L)
- Three courses from List D
- One additional course from List D or E

Geosciences option course lists can be found at <http://www.tacoma.uw.edu/interdisciplinary-arts-sciences/environmental-science-bs-degree-requirements>

**APPROVALS**

Chair/Program Director: <i>William M. Ky</i>	Date: 5/15/14
College/School/Campus Curriculum Committee: <i>Angela Will</i>	Date: 6/11/14
Dean/Vice Chancellor: <i>George Mc Donnell</i>	Date: 6/11/14
Faculty Council on Academic Standards/ General Faculty Organization/Faculty Assembly Chair:	Date:
<b>POST TRI-CAMPUS APPROVAL (when needed)</b>	
Faculty Council on Academic Standards/ General Faculty Organization/Faculty Assembly Chair:	Date:

## **Addendum 1: Option Course Lists (for DARS and departmental webpage)**

### **List A: Organismal, Molecular, Genetics**

TESC 242 Aging and Biology  
TESC 240 Human Biology and Environmental Interactions  
TESC 370 Genetics and Society  
TESC 378 Environmental Microbiology (L)  
TESC 422 Evolution  
TESC 405 Introduction to Biochemistry I  
TESC 408 Marine Plankton (L)  
TESC 436 Systems Biology (L)  
TESC 438 Environmental Biology: Marine Invertebrates (L)  
TESC 440 Environmental Entomology (L)

### **List B: Ecology, Conservation Biology**

TESC 202 Plant Biology and Ecology  
TESC 232 Issues in Biological Conservation  
TESC 236 Plants and People: The Science of Agriculture  
TESC 304 Tropical Ecology and Sustainability  
TESC 332 Conservation Biology in Practice (L)  
TESC 362 Introduction to Restoration Ecology (F)  
TESC 402 History and Ecology of Biological Invasions  
TESC 404 Costa Rica Field Studies: Ecology and Community (F)  
TESC 432 Forest Ecology (F)  
TESC 442 Marine Ecology (F)  
TESC 434 Biology, History/ Politics of Salmon in the Pacific  
TESC 437 Stream Ecology (L) (P)  
TESC 452 Plants, Insects and their Interactions (F)  
TESC 430 Environmental Modeling (P)  
TMATH 310 Statistics for Environmental Applications (P)

### **List C: Additional Courses for Biology Option**

TESC 211 The Science of Environmental Sustainability (P)  
TESC 215 Meteorology (P/if 6 cr- L)  
TESC 227 Earth History (P)  
TESC 238 Human Interactions with Marine Invertebrates (B)  
TESC 239 Energy and the Environment (P)  
TESC 241 Oceanography (P/if 6 cr- L)  
TESC 243 Geography of the Physical Environment (P)  
TESC 247 Maritime History and Science in the Pacific Northwest (P)  
TESC 302 Ecology of Mt. St. Helens (B/P/F)  
TESC 303 Sustainable Development in Africa (B/P/F)  
TESC 315 Applied Physics with Environmental Applications (P/L)  
TESC 316 Pacific Northwest Geology (P)  
TESC 317 Geology, Landscape and Culture (England) (P/F) Last Updated: 10/7/2013  
TESC 318 Biogeography (P/B, if 6 cr- L)  
TESC 319 Water Quality Concepts and Watershed Studies (P/L)  
TESC 321 Soils and Environmental Applications (P)  
TESC 326 Pacific Northwest Geology Field Trip (P/if 316 taken, then L)  
TESC 337 Environmental Geology (P/L)  
TESC 341 Climate Change (P)  
TESC 343 The Atmosphere and Air Pollution (P/L)  
TESC 345 Pollution and Public Policy (P)  
TESC 349 Research at SEA (P/B/F)  
TESC 415 Sedimentology (P/L)  
TESC 417 Field Geology (P/F)  
TESC 426 Ecological History Field Studies (B/F)  
TESC 431 Water Resources and Pollution (P/F)

TESC 433 Pollutant Fate and Transport (P/L)  
TESC 435 Limnology (P/F)  
TESC 439 Analytic Chemistry with Environmental Application (P/L)  
TESC 445 Estuarine Field Studies (B/P/F)  
T GIS 311 Maps and GIS (P/L)

**List D: Geoscience Courses**

TESC 215 Meteorology  
TESC 227 Earth History  
TESC 239 Energy and the Environment  
TESC 241 Oceanography (L)  
TESC 243 Geography of the Physical Environment  
TESC 247 Maritime History and Science in the Pacific Northwest  
TESC 315 Applied Physics with Environmental Applications (L)  
TESC 316 Pacific Northwest Geology + {TESC 326 PNW Geology Field Trip (L)}  
TESC 317 Geology, Landscape, and Culture (F)  
TESC 319 Water Quality Concepts and Watershed Studies (L)  
TESC 321 Soils and Environmental Applications  
TESC 341 Climate Change  
TESC 343 The Atmosphere and Air Pollution (L)  
TESC 415 Sedimentology (L)  
TESC 417 Field Geology (F)  
TESC 430 Environmental Modeling  
TESC 433 Pollutant Fate and Transport in the Environment (L)  
TESC 435 Limnology (F)  
TESC 437 Stream Ecology (L)  
TESC 445 Estuarine Field Studies (F)  
TGIS 311 Maps and GIS (L)  
TMATH 310 Statistics for Environmental Applications (B)

**List E: Additional Courses for Geosciences Option**

TESC 202 Plant Biology and Ecology (B)  
TESC 211 The Science of Environmental Sustainability  
TESC 232 Issues in Biological Conservation (B)  
TESC 236 Plants and People: The Science of Agriculture (B)  
TESC 238 Human Interactions with Marine Invertebrates (B)  
TESC 240 Human Biology and Environmental Interactions  
TESC 242 Aging and Biology (B)  
TESC 302 Ecology of Mt St. Helens (BF)  
TESC 303 Sustainable Development in Africa (BF)  
TESC 304 Tropical Ecology and Sustainability (B)  
TESC 318 Biogeography (B, if 6 cr- L)  
TESC 332 Conservation Biology in Practice (B/L)  
TESC 345 Pollution and Public Policy  
TESC 349 Research at SEA (B/F)  
TESC 362 Introduction to Restoration Ecology (B/F)  
TESC 370 Genetics and Society (B)  
TESC 378 Environmental Microbiology (B/L)  
TESC 380 Molecular Biology (B/L)  
TESC 402 History and Ecology of Biological Invasions (B)  
TESC 404 Costa Rica Field Studies: Ecology and Community (B/F)  
TESC 405 Introduction to Biochemistry I (if 6 cr, L)  
TESC 408 Marine Plankton (B/L)  
TESC 422 Evolution (B/if 6 cr- L)

## **Addendum 2: Capstone Requirements for DARS**

- 3) Capstone Experience: Plan with faculty adviser  
From: TESC 301,464,495,496,497,499, T GIS 415



Tacoma: Convert existing Biology and Geosciences tracks to options within the Bachelor of Science degree in Environmental Science (TESC-20140506A)

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

On 8/28/14, 11:17 AM

View attachment

Please review the attached 1503 pdf requesting to convert the existing Biology and Geosciences tracks to options within the Bachelor of Science in Environmental Science at the Tacoma campus and post comments by 5:00 pm on Friday, August 29th.

If you have any problems viewing the attachment or need disability accommodations, please contact the University Curriculum Office at uwcr@uw.edu.

Attachments:

 TESC-20140506A.pdf (1503 KB)  
 Download

fbookst  
FRED L  
BOOKSTEIN

On 8/28/14, 11:39 AM

I am puzzled by TESC 20140506A, perhaps because I am not familiar enough with the structure of the natural-science majors in Tacoma. In my other appointment, a professor of life sciences in Vienna, Austria, the topic of environmental biology is indeed one focus within the Faculty of Biology. (In its public outreach it is usually fused with its cousin Sustainability Studies.) But in this Tacoma situation the nesting relationship is reversed -- the biology emphasis now is a subset of the environmental. I cannot quite get my mind around this reversal -- how biology could be a subset of environmental studies -- not when the biology option is being presented as part of a program whose "course work and independent study will allow students to develop the tools needed for scientific research, technical writing, and grant preparation" (I quote from the proposed text for page 88 of the catalog). The problem is that the outside world, if I am any sort of representative of it, sees environmental biology as a subset of biology, not a subset of environmental studies. I don't see how a prospective employer or institution could evaluate, for instance, the competence of a student who completed this "biology option" for continuing work in the biological aspects of climate change, or agricultural runoff, or paving the suburbs, or whatever. It is the rigorous biological aspects that will drive the student's usefulness in further work, and it is those very aspects that have been blurred by the structure of the new "option" until they are nearly impossible to evaluate. (For instance, will the student have had any course at all in biological measurement -- anything about how you average measurements of form, or compute their variation, or correlate two or three of them? I don't see a requirement in quantitative reasoning here, and in my experience students who have circumvented such a requirement are seriously handicapped.) I fear the long-term advantages of the proposed structure (a disciplinary "option" within an interdisciplinary major) are obscure and, to some extent, vitiates the advantages of that interdisciplinary concentration in the first place. If a student wanted the biology "option," why wouldn't she just take a biology major with an environmental minor, the way most graduate schools and most employers would expect?

jfinke  
JOHN FINKE

On 8/28/14, 2:14 PM

The previous comments are warranted. That said, I think it is important to recognize that the development of degree programs at UWT is an emergent process. Degrees in biology and biomedical sciences will be offered in the future. In the meantime, the present proposal offers a chance for science students at UWT to better emphasize their skill set with their degree. This is a rational approach to best meet the needs of UWT graduates until other science major options can be established.

October 9, 2014

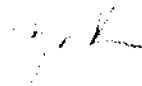
University of Washington Curriculum  
Box 355850

To Whom It May Concern:

Thank you for your feedback on the proposed changes to the Environmental Science major in the School of IAS. The main commenter raised concerns that the structure of a Biology option within an Environmental Science degree was atypical, and rightly pointed out that most institutions have a Biology degree and perhaps an Environmental option within it. While it is true that this is the structure at other institutions, because all the natural sciences are currently united at UW Tacoma under environmental sciences, and we do not have a separate biology degree, creating a biology option is a first step in providing a biology-focused curriculum in environmental sciences. It is important to draw a distinction between this and an "Environmental Biology" degree. Students taking the Biology option will still be receiving their degree in Environmental Science, which is arguably a broader focus than Environmental Biology, as it explicitly includes environmental chemistry, geology, and related environmental fields such as policy and ethics. As such, this breadth does not allow the degree of specialization that can be had within a disciplinary biology degree. This accounts for the lack of a course specifically on measurement of biological structures. Nevertheless, graduates of this program will be exposed to quantitative reasoning infused throughout the curriculum. In particular, the required bookend courses (TESC310, TESC410) and core requirements (TESC333 and TESC340) emphasize quantitative reasoning skills, as does the requirement for preparatory Introductory Statistics, Calculus 1, and either Calculus 2 or intermediate statistics.

Please feel free to contact us with further questions or concerns.

Sincerely,



Bonnie J. Becker  
Associate Dean  
Interdisciplinary Arts and Sciences  
University of Washington Tacoma

cc: Dr. Erica Cline