DIVISION OF NATURAL SCIENCES AND MATHEMATICS
2011-2012 EARTH AND PHYSICAL SCIENCE DEPARTMENTAL REPORT
Compiled by Jeffrey Templeton, Chair, July 13, 2012

I. EXECUTIVE SUMMARY

The Department of Earth and Physical Science consists of two program areas – Earth Science and Physics. The Earth Science program provides a liberal arts core education in geoscience with an emphasis on the scientific method, problem solving, and interdisciplinary science education. A key objective of the program is to prepare undergraduates for careers as professional geoscientists and educators. The Earth Science program also promotes the development of an informed citizenry for wise decision-making on issues related to natural resources, environmental quality, and sustainability in Oregon and beyond. The Physics program fosters a small-group active learning environment in which students explore and discover the laws of physics in a state-of-the-art laboratory. Students develop connections that link fundamental concepts in physics with phenomena covered in their Biology, Chemistry and Earth Science classes. The Physics program provides out-of-classroom experiences in space science and teacher training through membership in the NASA Oregon Space Grant Consortium.

The following is a summary of departmental highlights from the past year.

- Earth and Physical Science faculty members actively served as leaders on a number of campus-wide initiatives including NSM Division Chair in the College of LAS (Taylor), the Academic Excellence Showcase planning committee and the Program for Undergraduate Research Experiences (Templeton), and NSM division representatives to the Collective Bargaining team (Wade and Myers). Of particular note, Dr. Steve Taylor received the Outstanding Faculty Advising Merit Award from the National Academic Advising Association.
- Earth and Physical Science faculty members actively served as professional leaders in their fields. Professional service activities include: member of Oregon Dept. of Education Science Content Assessment panel (Wade), member of review panel for NSF-supported Science Education Resource Center teaching activity collection (Templeton), leadership in state-level geoscience advisory boards (Taylor), participation in NASA Oregon Space Grant Program (Schoenfeld), co-chair Geology section of Oregon Academy of Science (Myers), and collective faculty membership and participation in professional societies (American Institute of Physics, American Educational Research Association, American Geophysical Union, Association of American Geographers, Council on Undergraduate Research, Friends of the Pleistocene, Geological Society of America, International Organization of Palaeobotanists, National Association of Geoscience Teachers, National Association for Interpretation, National Science Teachers Association, Oregon Academy of Science, and Paleontological Society of America).
- Earth and Physical Science faculty members continue to be actively engaged in a wide spectrum of peer-reviewed research, publication, and related professional development. Dr. Myers prepared two draft manuscripts studying paleofloras in California. Dr. Templeton continued research on tephra geochemistry at Newberry Volcano, Oregon and was PI on an NSF grant proposal to upgrade the ES100 laboratory curriculum at WOU (with Taylor and Wade as Co-PIs). Dr. Taylor continued watershed research in western Oregon and continued work on a NIJ-funded finger print analysis project with Biology colleagues (Dutton, Dutton,

and Aldrich). Dr. Schoenfeld continued work as the PI on a Global Climate Change Education project funded by NASA. Current (2011-2012) active research grants and pending proposals related to EPS Department faculty total approximately $1.4 M (Refer to Appendix 1. Faculty Reports for additional information.)

- Earth and Physical Science faculty members continue to actively engage high-quality undergraduate teaching, learning, and curriculum development. With 4 tenured faculty and 5 adjunct instructors, the EPS department generated over 8100 student credits hours (SCH) during the 2011-2012 academic year, accounting for at least 25% of the total production in the Division of Natural Sciences and Mathematics.
- The Earth and Physical Science programs continue to grow in a sustainable manner, in parallel with overall university trends. ES100 LACC enrollments and retention are robust, and upper-division Earth Science course enrollments are solid and growing.
- The 2011-2012 academic year was associated with a notably robust growth in the undergraduate research program in Earth Sciences. A total of 5 students were actively engaged in research with projects funded by NASA Oregon Space Grant, Oregon Watershed Enhancement Board, and the National Institutes of Justice. Research projects focused on geographic information systems, fingerprint analysis, watershed research, river restoration, Newberry geochemistry, igneous petrology, cinder cone analysis and landscape modeling with high resolution Lidar. Students actively engaged the profession and presented their work at the WOU Academic Excellence Showcase and the Association of Engineering Geologists spring section meeting in Portland.

II. ENROLLMENT TRENDS

- The Earth Science program has experienced a steady number of graduates (range: 4-8) since 2001 and a stable enrollment in upper division major-minor courses (range: 6-18, average: 11). Earth Science enrollments have been increasing over the past 6 academic years (2006-2012). Total student credit hour production increased 15%, ES100 enrollments 10%, and ES200 enrollments have stabilized at ~40 students in fall term. The upper division population is growing, with a consistent range of 10 to 15 students in specialized ES courses. Cumulative growth rate in these areas is around 10% annually, approximately paralleling overall university trends. Ten-year average annual student credit hour production (SCH) in the program is ~8200, second in magnitude to Biology in the division (average annual ~9400 SCH over the same time period). The program is economical and efficient, with the highest annual credit-hour production per faculty-staff member (~400 SCH per faculty-staff) and the lowest salary:SCH ratio in the NSM Division. The program generates $400,000 to $500,000 of net profit, above faculty/staff salary costs, on an annual basis.
- The Earth Science student population is quite diverse in terms of skills, interests, and career goals, ranging from Earth Science majors with focused career objectives to Environmental Studies minors and Integrated Science Education majors. The average annual number of majors and minors in the Earth Science program is 50, with ~1200 students tracking through the LACC ES 104-105-106 sequence. Most ES 100 students are in their freshman or sophomore years, and over 60% list their major as “pre-education”. Enrollment in upper-

division specialty courses ranges from 10-15, with 20 to 40 in more accessible lower and upper division courses (e.g., ES 201-202-203 Principles of Geology, ES 331 Oceanography, and ES 390 Meteorology).

- Enrollments remain steady in the Physics-200 level service courses with 35-45 and 15-20 starting out Fall term in the algebra-based (PH201-202-203) and calculus-based (PH211-212-213) sequences, respectively. Fall 2011 enrollment in PH201 was notably high with 48 students. Improving Physics-sequence retention from Fall to Spring terms remains ongoing concern.

III. SUMMARY OF PROGRAM CURRICULUM CHANGES

No program curriculum changes were undertaken this year.

IV. PROGRAM ASSESSMENT ACTIVITIES AND RESULTS

Earth Science Program:

- The Earth Science program continues to implement a comprehensive evaluation plan that includes the following strategies: (1) formative embedded assessment, (2) summative assessment of the degree program, and (3) survey-based tracking of current students and graduates. The evaluation strategies described below began during the 2008-09 academic year with formative assessment strategies and will continue through 2014 when we hope to conduct an external review of the Earth Science program, pending institutional support.
- Formative Embedded Assessment: Formative assessment of the Earth Science Program is currently being conducted via a series of Embedded Assessment Strategies. These strategies specifically link student performance on course activities to program outcomes. A variety of methods and course activities are used for embedded assessment, including inquiry-based lab exercises, field studies, writing assignments (informal short essays and longer-form research papers), active-learning exercises, oral group presentations, and multi-media work samples. These types of embedded assessment strategies have been deployed in all upper-division Earth Science courses taught during spring term.
- Summative Assessment of Degree Program: The capstone course, Senior Seminar (ES 407), continues to serve as the primary Degree Program Assessment mechanism for Earth Science graduates. The objective of Senior Seminar is for students to conduct in-depth study and research on current topics in the Earth Sciences. By requiring Earth Science students to draw on information from the full range of major courses they have completed during their time as an undergraduate, students must demonstrate proficiency in a broad range of Earth Science content areas. Students are required to complete ES 407 during the final term of their senior year and must satisfactorily complete the capstone course to graduate from the program. Senior Seminar has been successfully incorporated into the campus-wide, Academic Excellence Showcase event sponsored by the Program for Undergraduate Research Experiences and Phi Kappa Phi.

- In conjunction with seminar inquiry-based, work-sample method described above, standardized exit exam models have been explored by Earth Science faculty members. One summative assessment strategy that has been pilot tested is the nationally standardized Fundamental Geology Exam that forms part of the Oregon State Board of Geologist Examiners professional licensing process. Since this initiative began, a total of 6 WOU Earth Science alumni have taken the OSBGE Fundamental Geology (FG) exam and all have met the passing requirements.

Physics Program:

- The "Force & Motion Concept Evaluation", a national assessment exam, is employed as part of the Fall term finals for both introductory physics sequences. In addition, MCAT-type multiple choice questions are used on exams for the algebra based physics course.

SWOT ANALYSIS

a. Strengths *(Key words: capabilities, resources, assets, marketing, innovative aspects, value, quality)*

The strengths of the Earth Science program are summarized as follows:

- The Earth Science program has a faculty:student ratio that is conducive to one-on-one contact, personalized instruction, and promotion of undergraduate research.
- The Earth Science program is one of the campus leaders with respect to service contributions to the Liberal Arts Core Curriculum and pre-education programs. The ES100 sequence (ES 104-105-106) that serves approximately 1300 students per year, is a common first destination for entering freshman, and has a notably high retention rate between fall, winter, and spring terms. ES100 encourages real-world problem solving and is appealing to non-science majors.
- Earth Science faculty members embrace a technology-based curriculum and are working to implement standardized program assessment tools.
- Earth Science faculty members actively serve as leaders on a number of campus-wide committees and serve in a variety of professional capacities.
- Earth Science faculty members are enthusiastically engaged in a wide spectrum of peer-reviewed research, publications, and related professional development.

The strengths of the Physics program are summarized as follows:

- The physics program offers small class size with opportunities for close student-faculty interaction.
- The physics laboratory represents a state-of-the- art active learning environment.
- Students have opportunities to participate in a wide range of activities through our affiliation with the NASA Oregon Space Grant Consortium.

b. Opportunities *(Key words: market developments, industry trends, nice markets, innovation, partnerships)*

Key opportunities for the Earth Science program include the following:

- Lower-division Earth Science enrollments have been increasing over the past 6 academic years (2006-2012). Total student credit hour production increased by 15% and ES100 enrollments by 10%. The upper-division population remains steady with a growing number of Earth Science degrees awarded. The program is economical and efficient, with a high annual credit-hour production per faculty-staff member (~400 SCH per faculty-staff) and a low salary:SCH ratio. The Earth Science program is profitable.
- A key aspect of the program is the close alliance with faculty in physics, chemistry, biology, and education. Faculty members from different disciplines work directly together on a daily basis and cultivate a multi-disciplinary, collegial atmosphere that is unique compared to other institutions. The cross-disciplinary alliance in NSM provides a superb opportunity for faculty and students with diverse interests to interact in a rich and stimulating academic environment. Earth Science plays an important role by providing a nexus for studies in the biological and physical sciences. In this regard, Earth Science faculty are instrumental in supporting a growing alliance of NSM faculty and programs that provide integrated, interdisciplinary field-based courses and research opportunities in Natural Science disciplines. In addition, there is a common linkage between majors and minors in Earth Science, Geography, and Environmental Studies. As such, a significant number of students share common classes in each of these programs.

Key opportunities for the Physics program include the following:

- The Physics program is actively engaged in K-12 community outreach and improving science teacher training in the State of Oregon. Linkages with NASA-based grants programs provides WOU student scholarships and supports teacher training opportunities with a focus on global climate change in the Earth system. The application of Physics to real-world problems in Earth Science represents an innovative opportunity for cross-collaboration between faculty and students.

c. Challenges *(Key words: market demand, sustainability, obstacles, weaknesses)*

Three primary challenges to advancing the Earth Science program at WOU include: (1) need for a full-time Departmental Laboratory Preparator, (2) over-dependence on adjunct faculty and lack of tenure-line positions, and (3) limited faculty time available for scholarly activities, program assessment, and faculty development.

- The most immediate challenge facing the Department of Earth and Physical Science at present is the pressing need for a full-time lab preparator. We currently share a half-time position with the Biology Dept. Growth in both the ES100 and BI100 introductory LACC laboratory science courses has made it challenging for the current staff member to accomplish all of the tasks that could and should be completed. A full-time, dedicated EPS lab preparator would remedy this situation.

- Another key challenge facing the Department of Earth and Physical Science is the over-dependence on adjunct faculty and lack of tenure-line positions compared to other departments in the division. The adjunct faculty ratio in Earth Science ranges up to 65%, almost double that of other NSM Division programs. The Earth Science program is currently in need of at least one tenure-track faculty position. Adjunct pay levels, teaching loads, and contract procedures at WOU are such that there is relatively high turnover in these positions, which ultimately destabilizes curricular programs and inhibits long-term development. Institutional stability, continuity, and future growth are dependent upon the stock of tenure-line faculty. Adjuncts represent short term investments with high turnover rate and curricular instability. Not only do tenure-track faculty members add to the vitality of individual courses and program curricula, they also represent an institutional investment in advanced levels of service, scholarship, and grant writing that is not typically possible for adjunct instructors. The Earth Science program is challenged by this instability.
- An ongoing challenge is also associated with the teaching load required of faculty. The standard teaching assignment requires 12 contact hours per week (36 FTE contact hours per academic year), with lecture hours counting for 1 FTE contact and lab hours counting for 0.75. The teaching load combined with maximum-capacity class sizes results in little time available for other faculty duties such as scholarly research, program planning / assessment, and professional service. As such, the bulk of the latter activities must be conducted after hours, on weekends, and during the summer. An additional challenge presented by the relatively high teaching load is that associated with depletion of creative energy and "teacher burnout".

Physics program challenges include the following:

- The most urgent challenge faced by the physics program is the lack of a second tenure line which limits the ability to offer upper division courses and to plan for programmatic upgrades.
- A high number of weekly student contact hours (typically 15-16) prevents the sole physics faculty member from fully engaging in scholarly and professional activities.
- Another challenge involves entering students who are ill-prepared for the quantitative problem solving demands that a university level physics class thrusts upon them.
- The availability of using the DataStudio software in NS101 is hit and miss; sometimes it works perfectly, other times the software just won't load.
- Issues with scheduling conflicts between upper-division Mathematics courses and upper-division Physics. Also, difficulties in convincing the Mathematics department to require that Applied Math majors take calculus based physics as part of their LACC.

d. Vulnerabilities (*Key words: gaps in capabilities, financials, cash flow, supply chain, disadvantages)*

Vulnerabilities for the Earth Science and Physics program are summarized as follows:

- The Earth Science program, along with others in the division, lacks a consistent source of funding for large-scale instrumentation and facility infrastructure. While we have

worked diligently to upgrade and support laboratory infrastructure, the Earth Science program still lags behind other science program areas in terms of modern laboratory equipment and resources.

- While the need is clearly documented by staffing and enrollment data, there is a notable lack of institutional commitment to securing a long overdue tenure-line addition of an Earth and Physical Science education specialist, comparable to that recently added to the Biology faculty complement.
- The primary vulnerability for the Physics program is poor student retention in both introductory sequences and lack of support for a second tenure-line physicist.

V. PROGRAM PLANNING AND INITIATIVES

The Earth Science Program is in the process of preparing the "**Departmental Assessment Plan: Student Learning Outcomes"** document, as requested by the Dean of the College of LAS in Spring 2012.

VI. OTHER ITEMS

None at this time to discuss.

VII. PUBLIC RELATIONS ITEMS FOR PROGRAM PROMOTION

None at this time to report.

APPENDIX 1. FACULTY AND STUDENT ACCOMPLISHMENTS

Provide bullet line items related to individual faculty and student achievements.

I. FACULTY AND STAFF ROSTER

Tenured Faculty Members

Jeff Myers, PhD, Professor
Bill Schoenfeld, PhD, Associate Professor
Steve Taylor, PhD, Professor and Division Chair
Jeff Templeton, PhD, Associate Professor and Department Chair

Non-Tenure Track Faculty Members

Karen Brown, M.S., Instructor (Departing WOU as of June 2012)
Don Ellingson, M.S., Instructor
Jeremiah Oxford, M.S., Instructor
Grant Smith, PhD, Instructor
Phillip Wade, M.S., Instructor

Staff

Julie Grammer, Laboratory Preparator, Biology-Earth Science

II. FACULTY HIGHLIGHTS

(See attached annual faculty reports for supporting documentation and further details).

a. Teaching

- **Jeff Myers**: continued working on redesigning new labs for ES 392 that focus on the development of geological thinking skills.
- **Bill Schoenfeld**: incorporated additional lecture demonstrations into the introductory physics courses; introduced a number of new experiments into physics labs, including: Ideal Gas Law, waves on strings, sound waves in tubes, conservation of energy, and electrostatic field mapping; improved layout and storage of materials in physics lab room.
- **Grant Smith**: Implemented Moodle technology into his ES 100 courses, allowing for greater flexibility for students to make up missed work.
- **Steve Taylor**: conducted field trips in ES322 and ES473; ES 202 was a Writing Intensive course.
- **Jeff Templeton**: conducted weekend field trip for ES 321; ES 201 was Writing Intensive; for ES 407 (Senior Seminar), organized a session in which 10 students presented the results of their research entitled “Case Studies in Volcano Monitoring and Hazards Mitigation” as part of the campus-wide Academic Excellence Showcase event.
- **Philip Wade**: GS 325 (Science Inquiry and Engineering Design for K8 Teachers) was a new course, requiring substantial preparation time because of the project oriented nature of the course; GS 203H/203HL class participated in WOU 2012 Academic Excellence Showcase.

b. Scholarship

Reports, Publications, and Peer-reviewed Abstracts:

Erwin, D.M., and **Myers, J.A.**, 2012, *Securidaca*-like samaras from the late Eocene Badger's Nose paleoflora, Modoc Co., CA, USA. Paleobotanical section, Botanical Society of America Annual Meeting, Columbus, OH (D.M. Erwin Presenting).

Kang, N.K., DeChenne, S.E., and **Smith, G.**, 2012, Inquiry Learning of High School Students Through a Problem-based Environmental Health Science Curriculum: School Science and Mathematics, v. 112(3), p. 147-158.

Taylor, S.B., Stanley, R., Aldrich, P., Dutton, B., Dutton, E., Hidalgo, S., In Press, Novel Use of GIS for Spatial Analysis of Fingerprint Patterns: Abstract Accepted for the 2012 Urban and Regional Information Systems Association (URISA) National Meeting, Portland, OR.

Stanley, R., Dutton, E., **Taylor, S**., Aldrich, P., and Dutton, B., 2012, Geographic Information Systems and Spatial Analysis – Part 1: Quantifying Fingerprint Patterns and Minutiae Distributions: Abstract Submission for American Academy of Forensic Sciences 2012 Meeting.

Dutton, E., **Taylor, S**., Aldrich, P., Dutton, B., and Stanley, R., 2012, Geographic Information Systems and Spatial Analysis – Part 2: A Monte Carlo Approach to Estimating Probabilities for Latent Print Identification: Abstract Submission for American Academy of Forensic Sciences 2012 Meeting.

Hidalgo, S., Dutton, B., Stanley, R., Aldrich, P., Dutton, E., and **Taylor, S.,** 2012, A Geometric Morphometric Approach to Fingerprint Analysis: Abstract Submission for American Academy of Forensic Sciences 2012 Meeting.

Dutton, E., **Taylor, S.,** Aldrich, P., Dutton B., 2011, Application of Geographic Information Systems and Spatial Statistics to Determine Probabilities for Latent Print Identifications: Proceedings of the International Association for Identification, Milwaukee.

Templeton, Jeffrey, 2012, Petrographic Problem-Solving Assignments: Science Education Resource Center, Teaching Petrology in the 21st Century Collection: http://serc.carleton.edu/ NAGTWorkshops/petrology/teaching_examples/58133.html.

Fisher, Kara, and **Templeton, Jeffrey H.**, 2012, Investigating Petrologic Linkages between Dacitic Ash-Flow Tuffs at Newberry Volcano through Analysis of Plagioclase Phenocrysts: Association of Environmental & Engineering Geologists 55th Annual Meeting Program with Abstracts, *in press*.

Wade, P, and Schepige, A., 2011, Engineering Design: Constructing Ideas for Teachers: National Science Teachers Association Annual Fall Meeting, Seattle, WA.

Presentations:

Templeton, Jeffrey, Thin Section Problem Solving Assignments: An Inquiry-Based, Active-Learning Strategy For Undergraduate Earth Science Students: Presented at the NSF-supported *On the Cutting Edge-Teaching Mineralogy, Petrology, and Geochemistry in the 21st Century* Conference, August 7-10, 2011, Minneapolis, MN.

Fisher, Kara, and **Templeton, Jeff,** Examining Petrologic Linkages between Dacitic Ash-Flow Tuffs at Newberry Volcano through Textural and Compositional Analysis of Plagioclase Phenocrysts: Poster presentation at the Oregon Section of the Association of Environmental and Engineering Geologists Student Research Night, May 15, 2012, Portland, Oregon.

Grants and Funding:

Schoenfeld, W.: "Careers in Space: Past & Present Technologies as Future Inspiration", Co-PI with Mary Katchur (Evergreen Aviation Museum), Adele Schepige (WOU), Shawn Rowe (Hatfield Marine Science Center), Stacie Williams (Air Force Research Lab-Hawaii): NASA 2011 Competitive Program for Science and Museums and Planetariums Plus Opportunities for NASA Visitor Centers and Other Informal Education Institutions (CP4SMP+), Budget Request $998,794. Submitted Sept. 2011, not chosen for funding.

Schoenfeld, W.: Worked at the request of Dean Hilda Rosselli with members of the Monmouth / Independence School District on a Title IIB No Child Left Behind proposal, submitted June 2012, not chosen for funding.

Taylor, S.B.: National Institute of Justice, Program for Applied Research and Development in Forensic Science: "Phase II - Application of Spatial Statistics and Probabilities to Latent Print Comparisons: Connecting Research to Forensic Practice" (2012 Submission; Co-PI with E. Dutton, P. Aldrich, B. Dutton; $686,267; Review Pending)

Taylor, S.B.: National Institute of Justice, Program for Basic Research to Support Forensic Science, "Spatial Analysis of Friction Skin Deformation and Fingerprint Distortion: A Novel Approach Using Geographic Information Systems and Geometric Morphometric Methods" (2012 Submission; Co-PI with E. Dutton, P. Aldrich, B. Dutton; $606,382; Review Pending)

Taylor, S.B.: Contract Agreement Upper Nehalem Watershed Council: "GIS Analysis and Results from Rapid Bio-Assessment (RBA) and Limited Factors Analysis (LFA) in the Upper Nehalem Watershed, Tillamook County, Oregon" (PI with WOU student assistants, $17,000)

Taylor, S.B.: Oregon Watershed Enhancement Board: "Water Quality Monitoring in the Mid-Willamette Valley" (Co-PI with P. Flatt, Cooperative Agreement with Oregon Dept. of Agriculture and Polk Soil and Water Conservation District, $15,000)

Taylor, S.B.: U.S. Environmental Protection Agency, Greater Research Opportunities (GRO) Fellowship for Undergraduate Environmental Study: "The Distribution and Occurrence of Nitrate in Groundwater Supplies of the Mid-Willamette Valley: Implications for Water

Resource Management in the Monmouth-Independence Area, Oregon" (Co-PI and faculty supervisor for K. Dana, WOU Student, $45,100)

Templeton, J.H., **Taylor, S.B., Wade, P.**, and Schepige, A.: Improving General Education Outcomes through Learning-for-Use Modules in Introductory Earth Science Courses, National Science Foundation-GeoScience Education Program, $121,158, Submitted Oct. 2011, Not Funded.

Wade, P., Oregon Mathematics and Science Partnership Programs Title II Grant with COE focused on science inquiry and enhancing engineering design opportunities for teachers and students in Central School District. Submitted June 2012, In Review.

c. Service

Jeff Myers: Senate Honors Committee; WOUFT 2011-2013 Contract Negotiation Team; Preview Day advisor; Co-chair of Oregon Academy of Science Geology Section; Consulting activities with Paleoenvironmental Consultants, Altadena, CA, and Paleoresource Consultants, Sacramento, CA.

Grant Smith: Served as the event supervisor for the Dynamic Planet section of the Oregon Science Olympiad held at WOU in April 2012. This included designing an appropriate challenge for middle school and high school students regarding the geology of rivers, groundwater, and lakes.

Bill Schoenfeld: NSM Division curriculum committee; Advisor for Physics minor and Integrated Science major; SOAR advisor; prepared feasibility study for pre-engineering program at WOU; NASA Space Grant representative.

Steve Taylor: Chair, Division of Natural Sciences and Mathematics; Chair, Oregon State Board of Geologist Examiners; member of the NSM Division Personnel Review Committee; ad-hoc "New Science Building" Committee, Budget Committee, and Building Committee; Preview Day and SOAR advisor; Member of the Oregon Geographic Information Council; Member of the Association of State Boards of Geology Council of Examiners; Chair of the Geological Society of America Academic and Applied Geoscience Relations Committee.

Jeff Templeton: Chair of the Earth and Physical Science Department; primary Department scheduler and budget manager; member of the NSM Division Personnel Review Committee and ad-hoc "New Science Building" Committee; Preview Day and SOAR advisor; member of Executive Committee for the WOU Program for Undergraduate Research Experiences; member of the WOU Academic Excellence Showcase Planning Committee; member and secretary of the WOU Academic Requirements Committee; Session chair for 2012 Academic Excellence Showcase; Served on the Igneous Rocks and Processes Review Panel for the NSF-supported Science Education Resource Center (SERC) teaching activity collection.

Philip Wade: Member 2011-2013 WOUFT Collective Bargaining Team representing Non Tenure Track faculty; member of the WOU Institutional Review Board; Oregon Department of Education Science Content Assessment Panel Member.

Participated in numerous workshops and on-line assessment activities; Education Board Member: A. C. Gilbert Discovery Village Science Museum, Salem OR; Session chair for 2012 Academic Excellence Showcase.

III. **STUDENT ACHIEVEMENTS**

- 2011-12 Academic Year Student Recognition Awards: Kathryn Roberts, Outstanding Lower-division Student in Earth Science; Kelsii Dana and Joe Toliver, Outstanding Graduating Seniors in Earth Science.
- 14 Earth Science students participated in the 2012 WOU Academic Showcase, authoring both scientific posters and oral presentations.
- Kelsii Dana continued work on a $45,000, two-year undergraduate research fellowship to study nitrates and groundwater quality in the mid-Willamette Valley.

Appendix 1. 2011-2012 Annual Faculty Reports

Natural Science & Mathematics 2011-2012
Annual Faculty Activity Report

Due Date: June 16, 2012 *Attach a current copy of your CV and send electronic copies as email attachments to Steve Taylor, taylors@wou.edu and cc to your department chair.*

Name: Jeffrey Alan Myers

Report Date: 6/1/2012

Title/Rank: 4rd yr Full Professor

Years in Rank: 13 at WOU

Initial Hire Date at WOU: 9/1999

Years of Service: 13 at WOU, 1 prior to WOU w/PhD

I. TEACHING AND CURRICULUM

A. Course Census

(List the courses that you have taught this year and corresponding enrollment data by term.)
FTE/course shown in ( )

Fall:
ES 106 – Earth System Science III (3) – 49 students
ES 106L – Earth System Science III (1.5) – 18 students
ES 331 – Introduction to Oceanography (3), 28 students
ES 453/553 – Geology of the PNW (4), 18 students (18 UG)

Winter: Sabbatical

Spring:
ES 104L – Earth System Science I (1.5) - 21 students
ES 104L – Earth System Science I (1.5) - 23 students
ES 203/203L – Historical Geology (5) – 20 students
ES 392 – Sedimentary Geology (4) – 12 students

Total FTE: 23.5
Sum total: 189 UG students
Productivity: Average 24 students/class; 189 seats filled/244 seats available = 78% seats filled

B. Course Development and Improvement

(Indicate any courses that were new preparations, significantly revised preparations, and anything significant about your efforts in these courses. Describe new techniques, materials, or technologies that were incorporated into your classroom teaching. Include any field trips or extended learning activities that took place outside of the classroom.)

- ES 392: Second year of course redesign with new labs that focus on the development of geological thinking skills. The completed redesign will be fully implemented in the 2014-2015 academic year, upon the completion of the last year of my winter quarter sabbaticals, and will fully integrate ES 203, ES 491/432, and ES 392 in order to build on skills developed in the successive courses. This will far better prepare earth science majors for careers in the geosciences, and minimize duplication of course content.

C. Program Assessment Activities

(Provide a bulleted summary of assessment activities that you have been involved within the past year, e.g. embedded assessments, exit exams, assessment planning, assessment-based curriculum changes, related professional development, etc.)

- Completion of standard, uniform syllabi using the Cal State University, Monterey Bay, model which includes learning objectives with measurable outcomes. All of my syllabi divide course content into "learning blocks" that address one or more aspects of the program and university missions and aspirations. Each block is tied to a set of homework and assessment tools to measure the effectiveness of each course component.

- Development of a quantitative learning assessment tool that I will continue to perfect and implement ion ES 100 lecture courses. The objective is to measure student learning in targeted areas tied to the University Mission. Implementation in ES 106 in Fall, 2011, measured a ~ 32% increase in student awareness/knowledge of 10 critical Earth System topics, emphasizing topics that are particularly relevant and important to all Oregon citizens.

D. Curriculum Changes

Redesign and improvement of the Honors curriculum to expand and hone the Thesis Preparation courses to better assist students in the design and progress of their thesis topics.

II. RESEARCH & SCHOLARSHIP

A. Research Projects

(Provide a bulleted summary of research projects you have worked on this year. Indicate any student involvement or collaborations in these projects.)

With Diane Erwin and Howard Schorn, UC Museum of Paleontology: Completion of research and production of a working draft manuscript on the timing of uplift of the Sierra Nevada basement block based on paleoelevation estimates from middle Eocene-Late Miocene paleofloras in west-central Nevada, the Great Valley of California, and the Sierra Nevada.

With Diane Erwin, UC Museum of Paleontology: Completion of research and production of a draft manuscript on Securidaca-like fruits from the latest Eocene Badger's Nose paleoflora of NE California. Results will be presented by Diane at the 2012 Annual Meeting of the Botanical Society of America in Columbus, OH.

B. Peer-Reviewed Publications

C. Presentations and Refereed Abstracts

Erwin, D.M., and Myers, J.A. 2012. *Securidaca*-like samaras from the late Eocene Badger's Nose paleoflora, Modoc Co., CA, USA. Paleobotanical section, Botanical Society of America Annual Meeting, Columbus, OH.

D. Grant Writing Activities

(Include proposal title, authors, funding source, amount, and status on funding request.)

E. Professional Certifications, Licenses, Other Specialty Credentials

III. FACULTY SERVICE

A. Student Advising

(Provide a bulleted list of activities related to academic advising, number of advisees, programs in which you advise, etc.)

- My advising load this year consists of: Seven Earth Science majors (ES majors are divided equally among the Earth Science faculty); five Integrated Science Majors; 7 EC/E and E/M education majors.

B. WOU Institutional Service

(Provide a bulleted list of department-division-university service duties that you have carried out, e.g., scheduling, recruiting activities, student clubs, search committees, faculty senate, mentoring, etc.)

a. Senate Honors Committee: 2008-present
b. WOUFT 2011-2013 Contract Negotiation Team
c. 2 Preview day activities

It was a particular honor to be included in the 2011-2013 WOUFT contract negotiation team. Under the superb leadership of Scott Beaver we were able to negotiate a contract before the start of the contract period that made significant progress in regaining lost ground in faculty compensation, and significant progress in improving compensation and hiring contracts for adjunct faculty and for summer instructors.

C. Leadership, Professional Service and Community Outreach

(List professional service completed this past year, include consulting activities and leadership roles.)

- Co-chair of Oregon Academy of Science Geology Section with Scott Burns (PSU)
- Consulting activities with Paleoenvironmental Consultants, Altadena, CA, and Paleoresource Consultants, Sacramento, CA.

D. Professional Societies

(List memberships in professional organizations.)

- Oregon Academy of Science –President 2007-2009; Co-Chair, Geology Section, 2007-present.
- Paleontological Society of America, Cordilleran Section (Chair, 2002-2003)
- International Organization of Palaeobotanists, 1996-present
- Great Basin Institute (Co-Director), 1994-present
- Botanical Society of America, Paleobotanical Section, 1999-present
- Native Plant Society of Oregon
- Santa Barbara Botanic Garden
- Geological Society of America 1996-present

IV. HONORS AND AWARDS

(Provide a bulleted list of honors and awards that you received in the past academic year.)

V. CHALLENGES AND PLANS FOR PROFESSIONAL GROWTH
(Provide a bulleted list of challenges and barriers to achievement in your role as a faculty member at WOU. Also list any plans for professional growth and/or mitigation of challenges.)

- No challenges. I hope to continue to develop methods to more fully incorporate quantifiable measures of learning success into courses and coursework through continued collaboration with colleagues at institutions with large investment and success at measuring student success.
- In the coming several years I hope to have the chance to thoroughly weed through lecture and lab materials in order to update them and to incorporate teaching strategies that, based on my experience, better fit the changing WOU student demographic and skill set.

VI. MISCELLANEOUS (Provide a bulleted list of any other items not covered above.)

VII. PUBLIC RELATIONS AND PROMOTIONAL HIGHLIGHTS
(From your above summary, list the highlights of your faculty scholarship, student scholarship and service-related activities that you would like to see prominently promoted on the university web site, in news media, campus brochures, newsletters, and other public-relations materials. Provide a short blurb for each item with any recommendations on how you would

Natural Science & Mathematics 2011-2012
Annual Faculty Activity Report

Name: William Schoenfeld **Report Date:**

Title/Rank: Associate Prof of Physics **Years in Rank: 7**
Initial Hire Date at WOU: Sept 2002 Years of Service: 10

I. TEACHING AND CURRICULUM

A. Course Census – 39 credits

(List the courses that you have taught this year and corresponding enrollment data by term.)

Fall 2011 – 13 credits
PH201 Lecture – 48 students
2 Sections PH201 Lab – 22 & 26 students
PH211 lecture & Lab – 16 students

Winter 2012 – 13 credits
PH202 Lecture – 31 students
2 Sections PH202 Lab – 20 & 11 students
PH212 lecture & Lab – 9 students

Spring 2012 – 13 credits
PH203 Lecture – 25 students
2 Sections PH203 Lab – 16 & 9 students
PH213 lecture & lab – 8 students

B. Course Development and Improvement

I incorporated many more lecture demonstrations this past year, but as is often the case, the availability of using the Datastudio software in NS101 is hit and miss; sometimes it works perfectly, other times the software just won't load. By spring term, PH203 was down to 25 students, so I just moved the class to the physics lab to be sure my demos would run smoothly. I also introduced and number of new experiments into lab this year. Some of them are: Ideal Gas Law, Waves on Strings, Sound waves in tubes, a new conservation of energy experiment, and Electrostatic field mapping to name a few. I've also made significant improvements to the layout and storage of materials in the physics lab, so that students can more easily get the materials they need in the physics lab with less reliance on the instructor.

C. Program Assessment Activities

I use the Force & Motion Concept Evaluation, a national assessment exam as part of my Fall final for both introductory physics sequences. In addition I use many MCAT type multiple choice questions on exams for the algebra based physics course.

D. Curriculum Changes

None other than suggesting to the math department that their applied math majors need to be taking calculus based physics as part of their LACC.

II. RESEARCH & SCHOLARSHIP

A. Research Projects

Continued work as the PI on WOU's NASA Global Climate Change Education Grant. We recently concluded 3 days of teacher workshops this past June. The group made 3 presentations at national conferences. I was involved in direct teacher support, making 12 trips to work with 4 different teachers at our partner K-8 school in Sheridan, Oregon. Work continues along a number of fronts integrating reading with hands on science activities for elementary & middle school students.

B. Peer-Reviewed Publications

none

C. Presentations and Refereed Abstracts

I had two representations at regional NSTA meetings accepted, but due to health problems I had to cancel the Hartford presentation (October 2011) and had a team member give the second presentation in our place – Seattle (Dec 2011). Both Adele & I were to have gone to the Seattle conference, but neither of us could attend for health reasons.

D. Grant Writing Activities

(Include proposal title, authors, funding source, amount, and status on funding request.)

1. Careers in Space: Past & Present Technologies as Future Inspiration, Mary Katchur (Evergreen Aviation Museum), William Schoenfeld (WOU), Adele Schepige(WOU), Shawn Rowe (Hatfield Marine Science Center-OSU), Stacie Williams (Air Force Research Lab-Hawaii) – NASA 2011 Competitive Program for Science and Museums and Planetariums Plus Opportunities for NASA Visitor Centers and Other Informal Education Institutions (CP4SMP+), Budget Request $998,794. Submitted Sept 2011, but not chosen for funding.
2. Worked at the request of Dean Rosselli with members of the Monmouth/Independence School District on a Title IIB No Child Left Behind proposal, submitted early June, not chosen for funding.

E. Professional Certifications, Licenses, Other Specialty Credentials

III. FACULTY SERVICE

A. Student Advising

I advise for the Physics minor, and the Integrated Science major – just a few students each year.

C. WOU Institutional Service

Department representative to Division curriculum committee, worked with Mathematics (unsuccessfully) to limit scheduling conflicts with physics program, SOAR, feasibility study for pre-engineering program at WOU,

C. Leadership, Professional Service and Community Outreach

(List professional service completed this past year, include consulting activities and leadership roles.)

D. Professional Societies

(List memberships in professional organizations.)

NSTA, AIP

IV. HONORS AND AWARDS

V. CHALLENGES AND PLANS FOR PROFESSIONAL GROWTH

(Provide a bulleted list of challenges and barriers to achievement in your role as a faculty member at WOU. Also list any plans for professional growth and/or mitigation of challenges.)

Single faculty member for a program area, and the value of which is underappreciated by other disciplines within the Division.

VI. MISCELLANEOUS (Provide a bulleted list of any other items not covered above.)

NASA Space Grant representative, attended annual statewide meeting (Portland Sept 2011)

VII. PUBLIC RELATIONS AND PROMOTIONAL HIGHLIGHTS

Natural Science & Mathematics 2010-2011
Annual Faculty Activity Report

Due Date: June 16, 2010 *Attach a current copy of your CV and send electronic copies as email attachments to Steve Taylor, taylors@wou.edu*

Name: Steve Taylor **Report Date:** July 15, 2011

Title/Rank: Professor of Geology **Years in Rank:** year 2 in progress
Initial Hire Date at WOU: September 15, 1999 **Years of Service:** 12

I. TEACHING AND CURRICULUM

A. Course Census

(List the courses that you have taught this year and corresponding enrollment data by term.)

Term	Course No.	Course Name/Section	Cr. Hr/ FTE	No. Students
Fall 2010	ES322	Geomorphology	4.0	11
Winter 2011	ES202	Physical Geology Lec/Lab	4.3	32
Winter 2011	ES341	Fundamentals of GIS	4.0	25
Spring 2011	ES473/573	Environmental Geology	4.0	18
Spring 2011	ES302	Quantitative Methods	2.3	14
Spring 2011	ES407	Senior Seminar	1.0	5
Summer 2011	ES408-508	River Environments	3.0	14

*** Note: 20010-2011 Taylor was on 0.5 FTE course load release to serve as NSM Division Chair*

B. Course Development and Improvement

(Indicate any courses that were new preparations, significantly revised preparations, and anything significant about your efforts in these courses. Describe new techniques, materials, or technologies that were incorporated into your classroom teaching. Include any field trips or extended learning activities that took place outside of the classroom.)

Course Development

Fall 2010-Spring 2011	Continued development of multi-media and online resources for a spectrum of Earth Science courses including ES104, ES106, ES202, ES473, ES341, and ES407
Winter 2011	Continued transfer of all pre-existing WebCT course materials (ES202, ES104, ES106, ES407) to the Moodle online course management environment.
Winter 2011	Continued development of real time audience response systems (“clickers”) for use in ES202 Principles of Geology.
Spring 2011	Compiled and organized materials for focus project on Newberry Volcano as part of ES407 Senior Seminar

Field Trips

Summer 2010	Trip leader: “Hydrology and Geomorphology of the Middle Deschutes and Lower Columbia Rivers”. Field trip in conjunction with ES408/508 River Environments.

Fall 2010	Trip leader: ES322 Geomorphology Neotectonics of the Coos Bay Area, in conjunction with Dr. Templeton.
Spring 2011	Trip leader: "Student Night at the Association of Engineering and Environmental Geologists Pacific Northwest Region; Portland State University". Field trip in conjunction with ES473/573 Environmental Geology
Spring 2011	Trip leader: "Solid Waste Management and Hydrogeology at the Coffin Butte Landfill, Benton County, Oregon". Field trip in conjunction with ES473/573 Environmental Geology.
Spring 2011	Trip leader: "Hydrogeology and Environmental Geology of the Monmouth-Independence Area, Polk County, Oregon". Field trip in conjunction with ES473 Environmental Geology.

C. Program Assessment Activities
(Provide a bulleted summary of assessment activities that you have been involved within the past year, e.g. embedded assessments, exit exams, assessment planning, assessment-based curriculum changes, related professional development, etc.)

Fall 2010	Updated ES program demographic and alumni data.
Fall 2010-Spring 2011	Continued embedded assessment activities in ES322, ES341, ES302, ES407 and ES473. Instruments included laboratory portfolios ("work samples"), embedded exam questions directly linked to the ES program mission, and research-based student poster presentations.

D. Curriculum Changes
(Provide a bulleted summary of curriculum changes that you were involved within the past year.)

No significant program curriculum changes this year.

II. RESEARCH & SCHOLARSHIP

A. Research Projects
(Provide a bulleted summary of research projects you have worked on this year. Indicate any student involvement or collaborations in these projects.)

Fall 2010-Spring 2011	Research Project: "Comparative Hydrogeomorphic Analysis of Western Oregon Watersheds Using Airborne Laser Swath Altimetry (LIDAR)" (with undergraduate student B. Snook)
Fall 2010-Spring 2011	Research Project: "GIS Analysis and Results from Rapid Bio-Assessment (RBA) and Limited Factors Analysis (LFA) in the Upper Nehalem Watershed, Tillamook County, Oregon" (with undergraduate students B. Snook, W. Vreeland, A. Leet)
Fall 2010-Spring 2011	Research Project: "The Distribution and Occurrence of Nitrate in Groundwater Supplies of the Mid-Willamette Valley: Implications for Water Resource Management in the Monmouth-Independence Area, Oregon" (with undergraduate student K. Dana)
Fall 2010-Spring 2011	Ongoing compilation of research literature and reference library related to watershed analysis, regional geomorphology, hillslope / fluvial processes.
Fall 2010-Spring 2011	Continued funded research project entitled "Application of Spatial Statistics to Latent Print Identifications: Towards Improved Forensic Science Methodologies" (Co-PI with E. Dutton and project team P. Aldrich, B. Dutton).

Spring 2011 Advanced ongoing research project: "Cinder Cone Analysis at Newberry Volcano" (with Dr. Templeton and students of ES407 Senior Seminar)

B. Peer-Reviewed Publications

In Review Manuscript submission: The Occurrence of Small-Scale Debris Fans in Sandstone Landscapes of the Central Appalachians: Case-Study Supplement to accompany the "Key Concepts in Geomorphology" textbook by P. Bierman and D. Montgomery, W.H. Freeman Publisher.

In Review Manuscript submission: Volcanic History and Cinder Cone Erosion at Newberry Volcano, Oregon: Case-Study Supplement to accompany the "Key Concepts in Geomorphology" textbook by P. Bierman and D. Montgomery, W.H. Freeman Publisher.

C. Presentations and Refereed Abstracts

Summer 2010 Dutton, E., Aldrich, P., Taylor, S.B., Dutton, B., 2010, NIJ Project Status Report – Application of Spatial Statistics to Latent Print Identifications: Proceedings of the Automated Fingerprint Identification Systems (AFIS) 24th Annual Users Conference, Portland, Oregon.

Winter 2010 Taylor, S., Dutton, B., Stanley, R., 2010, Invasive Plant Distribution and Land-Cover Change in the Luckiamute River Basin, Central Oregon Coast Range, American Association of Geographers.

Summer 2011 Dutton, E., Taylor, S., Aldrich, P., Dutton B., 2011, Application of Geographic Information Systems and Spatial Statistics to Determine Probabilities for Latent Print Identifications: Proceedings of the International Association for Identification, Milwaukee.

Summer 2011 Dutton, E., Taylor, S., Aldrich, P., Dutton, B., and Stanley, R., In Reivew, Geographic Information Systems and Spatial Analysis – Part 2: A Monte Carlo Approach to Estimating Probabilities for Latent Print Identification: Abstract Submission for American Academy of Forensic Sciences 2012 Meeting.

Summer 2011 Hidalgo, S., Dutton, B., Stanley, R., Aldrich, P., Dutton, E., and Taylor, S., In Review, A Geometric Morphometric Approach to Fingerprint Analysis: Abstract Submission for American Academy of Forensic Sciences 2012 Meeting.

D. Grant Writing Activities

(Include proposal title, authors, funding source, amount, and status on funding request.)

Fall 2011 Oregon Watershed Enhancement Board: "Water Quality Monitoring in the Mid-Willamette Valley" (Co-PI with P. Flatt, Cooperative Agreement with Oregon Dept. of Agriculture and Polk Soil and Water Conservation District, $15,000)

Spring 2011 National Science Foundation Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics (TUES) Program: "Improving General Education Outcomes through Learning-for-Use Modules in Introductory Earth Science Courses" (Co-PI with J. Templeton, P. Wade, $118,541, review pending)

Spring 2011 National Institutes of Justice: "Use of Geographic Information Systems and Spatial Analysis to Estimate Probabilities for Latent Print Identification: Connecting Research to Forensic Practice" (Co-PI with E. Dutton, P. Aldrich, B. Dutton), $757,411, review pending)

E. Professional Certifications, Licenses, Other Specialty Credentials

Maintained active registration as a Professional Geologist in the State of Oregon (Registration Number G1968), State Board of Geologist Examiners, Salem, Oregon.

III. FACULTY SERVICE

A. Student Advising

(Provide a bulleted list of activities related to academic advising, number of advisees, programs in which you advise, etc.)

Continued as faculty advisor in Environmental Studies and Earth Science programs (10 ES students, 2 Environmental Studies students). Awarded 2010 Faculty Advisor of the Year, Western Oregon University.

D. WOU Institutional Service

(Provide a bulleted list of department-division-university service duties that you have carried out, e.g., scheduling, recruiting activities, student clubs, search committees, faculty senate, mentoring, etc.)

(1) Lead Facility on Proposal for Construction of New Science Annex at WOU
(2) Member of NSM Personnel Review Committee at WOU
(3) Chair of NSM Technology Planning Committee at WOU
(4) Member of the NSM Building Infrastructure Planning Committee at WOU

(5) Continued as ESRI GIS licensing liaison for WOU. Part of this work includes ongoing implementation of a central GIS server for use by both the colleges of Education and LAS.

(6) Served as one of the Earth and Physical Science faculty representatives at Preview Days and SOAR at WOU.

(7) Informally worked on career placement for Earth Science-related graduates from WOU (maintain a job board and placement contacts for students in government and industry); developed a comprehensive advising and career guide for Earth Science majors.

(8) Continued soliciting funds and campus-wide services to further develop the Geo-Data Processing Lab in NS218A. The Geolab has received greater use the past year by Earth Science students and faculty for research and teaching activities.

(9) Served as ad-hoc administrator of the WOU Earth Science program web site and related public relations activities.

(10) Served as session chair and active faculty participant in the 2010 WOU Academic Showcase (comprising part of the new "PURE" initiative, Program for Undergraduate Research Experiences).

C. Leadership, Professional Service and Community Outreach

(List professional service completed this past year, include consulting activities and leadership roles.)

(1) Division Chair of Natural Sciences and Mathematics, Western Oregon University. The wide array of duties in this position include: budget management (~$250,000 supplies and services), personnel supervision (~50 faculty and staff), class scheduling, liaison with upper administration, student grievances, signatory duties on division paperwork, strategic planning, tenure and promotion work, building management.

(2) Continued serving as faculty advisor and university liaison to the Oregon Geographic Information Council, Salem Oregon. The function of the organization is to set standards for acquisition of Geographic Information Systems data in the state of Oregon.

(3) Continued duties as a board member and chair of the Oregon State Board of Geologist Examiners (OSBGE), Salem Oregon. The function of the organization is to set licensing standards for professional geologists in the state of Oregon. The wide array of duties in this position include: budget management (~$250,000 supplies and services), personnel supervision (~2 staff), liaison with state legislature and Oregon Dept. of Justice, and strategic planning.

(4) Continued serving as member of the national exam committee and council of examiners, Association of State Boards of Geology, Columbia, South Carolina. The function of the organization is to establish national testing standards for professional geology registration throughout the U.S.

(5) Continued serving as faculty advisor and university liaison to the State Geologic Map Advisory Committee, Oregon Dept. of Geology and Mineral Industries, Portland, Oregon. The function of the committee is to provide guidance and set priorities for state and federal geologic mapping initiatives in Oregon.

(6) Continued serving as university liaison for the Luckiamute Watershed Council, Monmouth, Oregon.

(7) Serving as participating scientist and faculty mentor in the Summer Ecosystem Informatics Institute at Oregon State University and HJ Andrews Experimental Forest. The six-week program involves 15 graduate and undergraduate students from institutions around the country. I worked in collaboration with Desiree Tullos and Julia Jones (OSU) to lead a river geology/rafting trip on the Deschutes River.

(8) Organized and sponsored Winter 2011 Natural Science Seminar Series: "Applications of Geographic Information Systems in Academia and Government"

D. Professional Societies
(List memberships in professional organizations.)

Maintained active membership in the following professional organizations: Geological Society of America, American Geophysical Union, Association of American Geographers, Friends of the Pleistocene.

IV. HONORS AND AWARDS
(Provide a bulleted list of honors and awards that you received in the past academic year.)

2011 Recognition of Achievement in Grantsmanship, Western Oregon University

V. CHALLENGES AND PLANS FOR PROFESSIONAL GROWTH
(Provide a bulleted list of challenges and barriers to achievement in your role as a faculty member at WOU. Also list any plans for professional growth and/or mitigation of challenges.)

(1) The anomalously high adjunct/tenure line faculty ratio (60%) in the Dept. of Earth and Physical Science is a major barrier to program development. Our perennial request for an Earth / Physical Science Education Specialist was denied by admin. Given that our department has only 4 tenured faculty members out of a total of 10 faculty, we are chronically hindered by lack of horsepower to contribute to departmental service tasks and development/assessment activities. As a result, only a couple faculty members are able and motivated to take on the service/reporting chores for the department. It's tiring and demoralizing to watch other better-staffed departments in the division advance, while we are hindered by a lack of tenure-line work horses who are committed to the long term mission of the institution.

(2) There is a chronic lack of time for scholarship outside of teaching and service. My research moves along at a slow pace, with the use of student assistants, but finding the time and space to

publish manuscripts is very limiting to professional advancement. This is a chronic problem at WOU.

(3) Increasing administrative demands for assessment reports: faculty workload is increasing with persistent calls for assessment data by upper administration, however there has been little to no investment in FTE, professional development, or faculty support services to help manage the growing expectations for administrative reporting.

(4) Teaching load reduction associated with Division Chair duties has resulted in removing me from the ES100 teaching rotation. ES100 is one of our most important program activities and benefits from the diverse participation of all faculty. My reduction in ES100 service load is a deficiency and weakens our program position during the interim while serving as NSM Chair.

VI. MISCELLANEOUS (Provide a bulleted list of any other items not covered above.)

(1) Maintained an employment / internship bulletin board for Earth Science students.
(2) Participated in the year-end Natural Science and Mathematics Awards Ceremonies.
(3) Participated in WOU commencement ceremonies.
(4) Continued alumni relations to provide seed money for the newly formulated Western Foundation, Earth Science Academic Advancement Fund.

VII. PUBLIC RELATIONS AND PROMOTIONAL HIGHLIGHTS
(From your above summary, list the highlights of your faculty scholarship, student scholarship and service-related activities that you would like to see prominently promoted on the university web site, in news media, campus brochures, newsletters, and other public-relations materials. Provide a short blurb for each item with any recommendations on how you would like news of your work disseminated.)

The best promotional nugget for this year is the growing undergraduate research program in Earth Sciences sponsored by the efforts of Templeton and Taylor. A total of 9 students were actively engaged in research during the 2010-2011 academic year with projects funded by Oregon Space Grant, Oregon Watershed Enhancement Board, and the National Institutes of Justice. Students actively engaged the profession and presented their work at the WOU Academic Showcase and the Association of Engineering Geologists spring section meeting in Portland. Student-related research projects involve geographic information systems, fingerprint analysis, watershed research, river restoration, geochemistry and igneous petrology.

Natural Science & Mathematics 2011-2012
Annual Faculty Activity Report

Name: Dr. Jeffrey Templeton **Report Date:** June 29, 2012

Title/Rank: Associate Professor of Geology **Years in Rank:** 9 years
Initial Hire Date at WOU: January 1995 **Years of Service:** 17+ years

I. TEACHING AND CURRICULUM

A. Course Census

List the courses that you have taught this year and corresponding enrollment data by term.

Fall Term 2011: ENROLLMENT
- ES 201W – Principles of Geology lecture .....36 students
- ES 201L – Principles of Geology labs (2 sections) .....17+19 students
- ES 301/301L – Petrographic Microscopy.....13 students
- ES 321 – Structural Geology .....11 students
- 0.25 FTE reassignment for EPS Department Chair

Winter Term 2012:
- ES 104 – Earth System Science I lecture.....59 students
- ES 450 – Introduction to Petrology .....11 students
- 0.25 FTE reassignment for EPS Department Chair

Spring Term 2012:
- ES 106 – Earth System Science III lecture .....46 students
- ES 354 – Volcanoes and Earthquakes .....26 students
- ES 407 – Senior Seminar .....10 students
- 0.25 FTE reassignment for EPS Department Chair

B. Course Development and Improvement

Indicate any courses that were new preparations, significantly revised preparations, and anything significant about your efforts in these courses. Describe new techniques, materials, or technologies that were incorporated into your classroom teaching. Include any field trips or extended learning activities that took place outside of the classroom.

- ES 201, taught during Fall term 2011, was Writing Intensive.
- During Fall term, I conducted a two-day field trip to Sunset Bay/Cape Arago and the

Roseburg area for Structural Geology (ES 321).

- During Winter term in Petrology (ES 450), I continued to engage students with "Petrographic Problem Solving" assignments, which are a series of active-learning strategies that require students to use petrographic microscopy techniques to solve geologic problems. Four are conducted over the course of the term, and each requires a class presentation and 2-page paper, so assessment is rather time consuming. As highlighted below, I presented a poster on this strategy at the *Teaching Mineralogy, Petrology, and Geochemistry in the 21st Century* Conference in August 2011 and contributed a detailed description of this learning activity to the Science Education Resource Center, Teaching Petrology collection in January 2012.
- For ES 104 and ES 106 taught during Winter and Spring terms, respectively, I continued to align the course content with the textbooks that recently changed editions.
- I taught Earth Science 407 (Senior Seminar) for the fourth time this past academic year. This course, which rotates on a three-year basis between the tenured geology faculty members, is the capstone experience for graduating Earth Science majors. The seminar focuses on a pertinent Earth Science topic, which this year was "**Case Studies in Volcano Monitoring and Hazards Mitigation**". Each of the ten students in the class became "experts" on a related sub-topic by reading scientific literature, leading group discussions, and giving formal presentations modeled after professional meetings to the campus community. Oral presentations were conducted as part of the Academic Excellence Showcase event held on May 31, 2012.
- In Spring term, I taught ES 354 (Volcanoes and Earthquakes) for the second time. Because it had been 3 years since this course was last offered, it was comparable to a new preparation. This course focuses on earthquake phenomena and volcanic processes, with an emphasis on their impact to people, infrastructure, and natural resources in Oregon and the western United States. I continued to revise all of the lecture materials for this course. I also updated and added new in-class activities, active learning strategies, and laboratory exercises that are designed to engage students in the learning process.

C. Program Assessment Activities

Provide a bulleted summary of assessment activities that you have been involved within the past year, e.g. embedded assessments, exit exams, assessment planning, assessment-based curriculum changes, related professional development, etc.

- In Spring term 2012, I conducted Embedded Assessment strategies for ES 407, Senior Seminar. These strategies are specifically aligned with the learning outcomes for the Earth Science Major.
- Will complete and submit "Earth Science Program Assessment Plan: Student Learning Outcomes" as requested by Dean of College of Liberal Arts and Sciences in July 2012.

D. Curriculum Changes

No formal curriculum changers were undertaken this past year.

II. RESEARCH & SCHOLARSHIP

A. Research Projects

Provide a bulleted summary of research projects you have worked on this year. Indicate any student involvement or collaborations in these projects.

- I continued to work on two research initiatives at Newberry Volcano near Bend. Key outcomes from the past academic year are summarized in the following paragraphs.
  1. The objective of the first project is to constrain the petrogenetic evolution of the Newberry magma system using the Pleistocene ash-flow tuff deposits. I made slow but steady progress on this project in the past year. Most notably, I continued work started during my sabbatical in 2010 studying the geochemistry of glass and minerals in pumices from the Newberry tuffs via electon microprobe analyses at Oregon State University. Of particular note, I mentored an undergraduate student (Kara Fisher, Earth Science major) in an independent research project this past academic year. She conducted a detailed study of textural and compositional attributes of plagioclase phenocrysts within pumices from the two compositionally similar dacitic ash-flow tuffs using microprobe data and photomicrographs collected during my sabbatical. She presented the results of this project at the Oregon Section of the Association of Engineering Geologists Student Research Night in May 2012, where she was awarded the top Undergraduate Research Project. We also submitted an abstract for the national AEG meeting to be held in September 2012. I also worked with one of our recent graduates (Jody Becker, BS Earth Science, 2011) on a manuscript for the inaugural issue of the new undergraduate research journal at WOU. Unfortunately, personal issues on the part of the student and glitches in the timing of the review/editing process made it unfeasible for us to complete this paper. As with all scholarly endeavors at WOU, finding time to make meaningful headway on research projects is always a challenge, but I continue to push forward.

  2. The second research project centers on the numerous cinder cones that punctuate the landscape at Newberry Volcano. I am collaborating with Dr. Steve Taylor on this project, and we have actively involved students in collecting digital map data using GIS software and analyses. During the past academic year, we attempted to engage an incoming Earth Science undergraduate who is part of the NSF-funded Increasing Diversity in Earth Sciences (IDES) program run through Oregon State University. Under our guidance, she presented a poster at the OSU LSAMP conference on the initial results of her project. Alas, it is unlikely that she will continue to work on this research. The cinder cone project is ripe for publication, and Taylor and I need to find the time to prepare a manuscript, hopefully in the next 1-2 years.

- I have continued to work on disseminating the results of a curriculum improvement project that was funded through the National Science Foundation. For this project, I have developed a pedagogical model that integrates geologic problem solving with petrographic microscopy and digital image analysis in two courses in the Earth Science major at WOU. In August 2011, I gave an invited poster presentation describing this teaching strategy at the *Teaching Mineralogy, Petrology, and Geochemistry in the 21st Century* Conference held in Minneapolis, MN. As a follow up, I submitted a detailed description of "Petrographic Problem Solving Assignments" to the NSF-supported Science Education Resource Center (SERC) website. This learning activity is currently available as part of the SERC Teaching Petrology collection and will undergo review for consideration as an Exemplary submission to the SERC collection. At some point, I hope to prepare a manuscript for the *Journal of Geoscience Education* discussing the pedagogy and related assessment of student learning gains in the petrology curriculum.

- I continued to work on a long-term geoscience education project centered on developing inquiry-based laboratory curriculum for the introductory LACC Earth System Science (ES 100) courses at Western Oregon University. Most recently, I was lead author on three major National Science Foundation proposals that were submitted over a 1.5 year span to support this initiative. The latest was submitted in October 2011 to the NSF–GeoScience Education Program. The proposal, entitled "Improving General Education Outcomes through Learning-for-Use Modules in Introductory Earth Science Courses", was envisioned as a collaborative venture between the Earth Science Program and the College of Education at WOU. Regrettably, this proposal was declined, but overall, it received positive reviews (one VERY GOOD and three GOODs). After three rejections from NSF, we have decided to look for alternative funding sources for this project.

B. **Peer-Reviewed Publications**

Templeton, Jeffrey, 2012, Petrographic Problem-Solving Assignments: Science Education Resource Center, Teaching Petrology in the 21st Century Collection: http://serc.carleton.edu/ NAGTWorkshops/petrology/teaching_examples/58133.html.

C. Presentations and Refereed Abstracts

Refereed Abstract:

Fisher, Kara, and **Templeton, Jeffrey H.**, 2012, Investigating Petrologic Linkages between Dacitic Ash-Flow Tuffs at Newberry Volcano through Analysis of Plagioclase Phenocrysts: Association of Environmental & Engineering Geologists 55th Annual Meeting Program with Abstracts, *in press*.

Invited Presentation:

Templeton, Jeffrey, Thin Section Problem Solving Assignments: An Inquiry-Based, Active-Learning Strategy For Undergraduate Earth Science Students: Presented at the NSF-supported *On the Cutting Edge-Teaching Mineralogy, Petrology, and Geochemistry in the 21st Century* Conference, August 7-10, 2011, Minneapolis, MN.

Co-authored Student Presentation:

Fisher, Kara, and **Templeton, Jeff,** Examining Petrologic Linkages between Dacitic Ash-Flow Tuffs at Newberry Volcano through Textural and Compositional Analysis of Plagioclase Phenocrysts: Poster presentation at the Oregon Section of the Association of Environmental and Engineering Geologists Student Research Night, May 15, 2012, Portland, Oregon.

D. Grant Writing Activities

Include proposal title, authors, funding source, amount, and status on funding request.

Title	Authors	Funding Source	Amount	Status
Improving General Education Outcomes through Learning-for-Use Modules in Introductory Earth Science Courses	Jeffrey Templeton, Stephen Taylor, Philip Wade, Adele Schepige	National Science Foundation – GeoScience Education Program	$121,158	Not Funded
Course Reassignment for Scholarly Activity for 2012-13 Academic Year	Jeffrey Templeton	WOU Faculty Development Grant	3-4 hours of FTE	Yes

III. FACULTY SERVICE

A. Student Advising

Provide a bulleted list of activities related to academic advising, number of advisees, programs in which you advise, etc.

- Major Adviser for Earth Science and Integrated Science Teacher Education (~16 advisees).
- Adviser for Earth Resources, Earth System Science, and Geology minors (~8 minor advisees).

E. WOU Institutional Service

Provide a bulleted list of department-division-university service duties that you have carried out, e.g., scheduling, recruiting activities, student clubs, search committees, faculty senate, mentoring, etc.

Departmental/Program service duties

- Continue to actively serve as **Chair of the Earth and Physical Science Department**. In May 2012, I was re-elected for a fourth consecutive three-year term.
- Responsible for all scheduling, staffing, and related tasks for the Earth System Science sequence (ES 104, 105, and 106) lecture and lab courses, lower- and upper-division Earth Science courses, and Physics lecture and lab courses.
- Managed the departmental budget, which was over $50,000 this year.
- Supervised the Earth System Science lab preparator.
- Ordered equipment and materials for Earth System Science and Geology courses.

Divisional service duties

- Member of the **NSM Division Personnel Review Committee**.
- Served on the ad-hoc **"New Science Building" Committee**. Developed a comprehensive space re-allocation model for the Natural Science building in collaboration with colleagues in the Biology Department.
- Worked with department heads of Biology, Chemistry, and Math to distribute Division Travel funds.
- Member of the **NSM Division Budget Committee** and **Building Committee**.
- Represented the Earth Science program at two **Academic Fair/Preview Days** (October 15, 2011 and February 11. 2012). Prepared display for prospective students.
- **SOAR** (July 13, 2012). Assist incoming students in the Earth and Physical Science Department with scheduling.

University-wide service

- Began serving on the **WOU Faculty Senate Academic Requirements Committee**; served as secretary for the ARC during the past academic year.
- Continued serving as an active member of the **Executive Committee** for the **Program for Undergraduate Research Experiences** at WOU.
- Continued serving as an active member of the **Academic Excellence Showcase Planning Committee**.
- Other notable campus-wide service activities included the following:
  - Attended commencement (June 16, 2012).

C. Leadership, Professional Service and Community Outreach

List professional service completed this past year, include consulting activities and leadership roles.

- Served on the **Igneous Rocks and Processes Review Panel** for the NSF-supported Science Education Resource Center (SERC) teaching activity collection. Completed thorough reviews of nine mineralogy, petrology and geochemistry learning activities that are part of the SERC *On the Cutting Edge* collection.
- Conducted a comprehensive chapter review (Ch. 4, Rock Groups and the Rock Cycle) for an introductory Earth Science textbook that is currently under development by Norton Publishing Co.
- Organized presentation at WOU by Geological Society of America Distinguished Richard Jahns Lecturer, Dr. Scott Burns.
- Continued to serve as WOU's **Campus Representative** for the Geological Society of America.

D. Professional Societies

List memberships in professional organizations.

- **Member**, Geological Society of America (GSA); American Geophysical Union (AGU); National Association of Geoscience Teachers (NAGT); Council on Undergraduate Research (CUR).

IV. HONORS AND AWARDS

Provide a bulleted list of honors and awards that you received in the past academic year.

V. CHALLENGES AND PLANS FOR PROFESSIONAL GROWTH

Provide a bulleted list of challenges and barriers to achievement in your role as a faculty member at WOU. Also list any plans for professional growth and/or mitigation of challenges.

Challenges and Barriers:

- The Earth and Physical Science Department would be better served by having a dedicated ¾ to full time lab preparator, as opposed to the current ½ and ½ split between Biology.
- The Earth and Physical Science Department has a critical need for at least one additional tenure-track faculty position, preferably in the area of Earth/Physical Science Education.

Plans for Professional Growth:

My plans and goals for professional growth include the following: (1) continue a research project focusing on the petrology and volcanology of Pleistocene ash-flow tuffs exposed at Newberry Volcano in central Oregon, culminating in the submission of a manuscript, (2) obtain external funding to improve the introductory Earth System Science laboratory curriculum at WOU; and (3) submit a manuscript to the *Journal of Geoscience Education* discussing the results of the undergraduate geoscience curriculum project that was funded through NSF.

VI. MISCELLANEOUS

Provide a bulleted list of any other items not covered above.

Promoted to the rank of Professor of Geology during the past academic year.

VII. PUBLIC RELATIONS AND PROMOTIONAL HIGHLIGHTS

From your above summary, list the highlights of your faculty scholarship, student scholarship and service-related activities that you would like to see prominently promoted on the university web site, in news media, campus brochures, newsletters, and other public-relations materials. Provide a short blurb for each item with any recommendations on how you would like news of your work disseminated.

- The volcanology and petrology research initiatives at Newberry Volcano might be interesting from a Public Relations and Promotional standpoint.
- The new curriculum / pedagogical model for teaching petrology that I have developed is pretty cool.

Natural Science & Mathematics 2011-2012
Annual Faculty Activity Report

Due Date: June 30, 2012 *Attach a current copy of your CV and send electronic copies as email attachments to Steve Taylor, taylors@wou.edu*

Name: Philip Wade **Report Date:** June 20, 2012

Title/Rank: NTT Instructor **Years in Rank:** 14
Initial Hire Date at WOU: 9-16-1998 **Years of Service:** 14

I. TEACHING AND CURRICULUM

A. Course Census

Summer 2011

ES 106 (enrollment – 51)

ES 106L (enrollment – 51)

ES 104 (enrollment – 24)

ES 10L (enrollment – 24)

GS325 (enrollment –10)

Fall 2011

GS 313W (enrollment – 18) Writing intensive course. Major revisions to align with new 2009 Oregon Dept. of Education Core Science Standards.

GS 325- (enrollment – 24)

Major revisions to align with new 2009 Oregon Dept. of Education Core Science Standards.

ES 104L (enrollment – 24)

ES 100 Lab coordinator: Constructed ES 105L instructor MOODLE sites to be used as resource for all ES instructors. Ordered ES 100 lab materials and coordinated lab schedules and lab preparation.

Winter 2012

ES 105L (enrollment – 24)

ES 105L (enrollment – 24)

ES 105L (enrollment-18) Overload to cover colleague out on sabbatical.

GS 325 (enrollment – 23) New course as first term offering only GS 325 methods courses. Substantial preparation time involved with project oriented course. Student projects included a 3-week engineering design project and a scientific inquiry project. Class MOODLE site constructed. Continued with COE Professor Adele Schepige a formal research project (Engineering Design: Constructing Ideas for Teachers and Students) on student learning using IRB approved research design.

GS 325- (enrollment – 18) 2nd course (same as above)

ES 100 Lab coordinator: Constructed ES 106L instructor MOODLE sites to be used as resource for all ES instructors. Ordered ES 100 lab materials and coordinated lab schedules and lab preparation.

Spring 2012
GS 325 (enrollment – 23)
GS 325- (enrollment – 20)
ES 106L (enrollment – 25)
GS 203H-and GS 203HL (enrollment – 16) (co-taught with Arlene Courtney) (Honors Science – Alternative Energy) "Essentially" New Course with substantial preparation. Enhanced GS 203H Moodle Site for course. Used on-line assignments and in-class labs. Major prep time for class Video Documentary Projects (8-documentaries) that were presented at AES, 2012. Class participated in WOU Academic Excellence Showcase. Renewed formal research project on student learning using IRB approved research design.

B. Course Development and Improvement

GS 325- (enrollment – 24) New course: "Science Inquiry and Engineering Design for K8 Teachers." Substantial preparation time involved with project oriented course.

- Student projects included a 3-week engineering design project and a 3-week scientific inquiry project.
- Students were required to develop and teach two science lessons.
- Class MOODLE site constructed.
- Continued with COE Professor Adele Schepige a formal research project (Engineering Design: Constructing Ideas for Teachers and Students) on student learning of both engineering design and scientific inquiry content using IRB approved research design.
- Completed presentation (Engineering Design: Constructing Ideas for Teachers and Students) to NSTA Seattle 2011 conference on STEM education.

GS 203H-and GS 203HL

- Project-based course with substantial preparation. Enhanced GS 203H Moodle Site for course. Used on-line assignments and in-class labs. Introduced new web-based content modules on energy resources (Fossil Fuels).
- Introduced students to network available research tools (e.g. Wiki).
- Major prep time for class Video Projects that were presented at AES, 2012.
- Developed (in-progress) ~100 minute DVD consisting of 8 student projects.
- Class participated in WOU 2012 Academic Excellence Showcase.

C. Program Assessment Activities

- Embedded assessment for **GS 325** consisting of Engineering Design Project evaluation using ODE Engineering Design Work-Sample criteria, 2-student created teaching lessons evaluated, and required students to conduct an "authentic" science project based on ODE Inquiry Science Work-Sample criteria. Used 2 exams as content assessment vehicles.
- Embedded assessment for **GS 203H** included on-line discussion questions, in-class laboratory activities, video project presented at AES, 2012 and exams as content assessment vehicles. Students required to use internet research tool (Wiki) to share information.
- Renewed formal IRB approved research project (Using Student Created Video Documentaries in Science Class).
- Renewed with COE Professor Adele Schepige a formal research project (Engineering Design: Constructing Ideas for Teachers and Students) on student learning of both engineering design and scientific inquiry content using IRB approved research design.

D. Curriculum Changes

GS 325 -New curriculum for new course. See comments above.

II. RESEARCH & SCHOLARSHIP

A. Research Projects

- GccIFT: Global Climate Change Institute for Teachers Workshops: (June 22-24, 2011) (~20 K-8 teacher participants). Participated in developing workshop curriculum and conducting workshops.
- **Using Student Created Video Documentaries in Science Class**. IRB approved research project renewed to assess GS 203H course learning outcomes. Have been invited to present research findings at American Geophysical Union Annual Fall Meeting in SF, CA December, 2012 for Session entitled "Is Video Replacing Writing."
- **Engineering Design: Constructing Ideas for Teachers and Students.** IRB approved research project initiated with COE Professor Adele Schepige to assess GS 325 course learning outcomes and to address a longitudinal (3-year) study to assess pre-service K8 teacher's conceptions of engineering design and scientific inquiry. Initial results presented at NSTA Seattle Conference on STEM education in December 2011.

B. Peer-Reviewed Publications

- None

C. Presentations and Refereed Abstracts

- Wade, P. and Schepige, A., (2011) **Engineering Design: Constructing Ideas for Teachers.** National Science Teachers Association Annual Fall Meeting in Seattle, WA, December, 2011.

D. Grant Writing Activities

- **Improving General Education Outcomes through Learning-for-Use modules in Introductory Earth Science Courses. $**125,000.00 NSF TUES proposal submitted May 27, 2011 with PI Jeff Templeton, co-PI Steve Taylor, co-PI Adele Schepige, and co-PI Philip Wade. (Not Funded)
- **Oregon Mathematics and Science Partnership Programs Title II** grant submission with COE and Central School District focused on science inquiry and enhancing engineering design opportunities for teachers and students in Central School District. Proposal submitted June 4, 2012.

E. Professional Certifications, Licenses, Other Specialty Credentials

- California single subject credential physical science, (1989)
- California supplemental credential mathematics, (1989)

III. FACULTY SERVICE

A. Student Advising

- Continued College of Education student evaluations for admittance into K8 licensure program.

B. WOU Institutional Service

- Member 2011-2013 WOUFT Collective Bargaining Team representing Non Tenure Track faculty.
- Member IRB (Institutional Review Board) committee.

C. Leadership, Professional Service and Community Outreach

- Oregon Department of Education Science Content Assessment Panel Member. Participated in numerous workshops and on-line assessment activities.
- Education Board Member: A. C. Gilbert Discovery Village Science Museum, Salem OR
- Session chair for 2012 Academic Excellence Showcase.

D. Professional Societies

- National Science Teachers Association
- American Geophysical Union

IV. HONORS AND AWARDS

- None

V. CHALLENGES AND PLANS FOR PROFESSIONAL GROWTH

VI. MISCELLANEOUS (God Help Us All)

VII. PUBLIC RELATIONS AND PROMOTIONAL HIGHLIGHTS

Natural Science & Mathematics 2011-2012
Annual Faculty Activity Report

Name: Don Ellingson **Report Date: 25 June 2012**

Title/Rank: Adjunct Instructor **Years in Rank: 14 years**

Initial Hire Date at WOU: Jan 1998 **Years of Service: 14 years plus 2 years as a GTA in the 1980's**

I. TEACHING AND CURRICULUM

A. Course Census

Fall 2011:
ES 106 (Earth System Science III) -- 57 students
ES 106L (Earth System Science III Lab) -- 88 students
Winter 2012
ES 105 (Earth System Science II) -- 94 students
ES 105L (Earth System Science II Lab) -- 43 students
ES 390 (Meteorology) -- 24 students
Spring 2012
ES 106 (Earth System Science III) -- 34 students
ES 106L (Earth System Science III Lab) -- 44 students
GS 351 (Astronomy) -- 22 students

B. Course Development and Improvement

We drew many more students to Astronomy this year, suggesting we did something right last year. Astronomy and space exploration are rapidly advancing fields and I introduced a considerable amount of new material this year.

In Meteorology I continued to emphasize information that helps the student understand climate change. I also used much of this information in my ES 106 class . . . Final Exam results indicate that essentially all students understood the main concepts.

C. Program Assessment Activities

The following is a repeat of what I reported last year:
My assessment activities include
-- Lecture Final Exam
-- Lecture Midterm Exam
-- Lecture Assignments
-- Lecture and Lab Quizzes
-- Lab: discussions with students . . . watching (and listening to) the students work
-- Lab: review of weekly lab reports
-- On a daily basis: updating lesson plans addressing weaknesses identified by the above activities
-- On a term to term basis: adjusting syllabus outline and reading material based on past student strengths and weaknesses and on current issues of interest, e.g. global warming, economic uncertainty.

Last year I commented that "student performance over the past 10 years seems to be stagnant or declining, both in lecture and lab. The main cause appears to be reading deficiencies. If I present a concept three or more times in class the class does great on exam questions based on the concept, but if I present it only once and rely on student reading to reinforce the concept, test results are disappointing. Math is also a big stumbling block for many students." My comments about reading and math are still valid, but student performance seemed a little better.

II. RESEARCH & SCHOLARSHIP (Following input is cut and paste from last year)

A. Research Projects

I continue to love what I teach and teach what I love. Global Warming is a very serious issue . . . and so is Cascade volcano eruptions, and Cascadia Subduction Zone earthquakes.

Is there life elsewhere in the universe, and if so could there be intelligent life, and could we communicate with it?

I'm constantly studying these and other issues, with emphasis on the Global Warming. Sea level is rising!

E. Professional Certifications, Licenses, Other Specialty Credentials

I have an Oregon Certificate to teach math, physics, chemistry, integrated science, and social science, at the 5-12 level.

I'm a certified USAF Air Training Command Instructor

I'm a retired USAF Weather Officer . . . most of my work was in East Asia and West Europe (and I was in Afghanistan before the Soviets attacked).

I'm a certified weather forecaster for locations in Japan, Southeast Asia, England, and Germany.

I managed (commanded) USAF weather offices in England and Germany during the Cold War.

I was a US-Canadian Planning Group representative on the NATO Military Committee for Weather Plans and Operations, again during the Cold War (which we won without having to go into battle to do so).

V. CHALLENGES AND PLANS FOR PROFESSIONAL GROWTH

I'm unaware of any plans for the professional growth of Adjuncts at this university.

I'm unaware of any opportunity for increased responsibility or rank for an Adjunct.

For me, personally (at my age), it doesn't matter much . . . I'm fully employed with trying to stay up with the rapid changes in Meteorology/Climatology and Astronomy . . . but what about something that would entice the promising young adjuncts (we've had many) to stay at Western?

Natural Science & Mathematics 2011-2012
Annual Faculty Activity Report

Due Date: June 30, 2012 *Attach a current copy of your CV and send electronic copies as email attachments to Steve Taylor, taylors@wou.edu and cc to your department chair.*

Name: Grant D. Smith **Report Date:** June 2012

Title/Rank: adjunct instructor **Years in Rank: 4 years**
Initial Hire Date at WOU: January 2008 **Years of Service: 4 years**

I. TEACHING AND CURRICULUM

A. Course Census
(List the courses that you have taught this year and corresponding enrollment data by term.)

ES104 Lecture (1 section) – Fall 2011 – 58 students
ES104 Labs (3 sections) – Fall 2011 – 73 students
ES104 Lecture (1 section) – Winter 2012 – 60 students
ES104 Labs (5 sections) – Winter 2012 – 96 students
ES105 Lab (1 section) – Winter 2012 – 14 students
ES106 Lecture (2 sections) – Spring 2012 – 77 students
ES105 Labs (5 sections) – Spring 2012 - 96 students

B. Course Development and Improvement
(Indicate any courses that were new preparations, significantly revised preparations, and anything significant about your efforts in these courses. Describe new techniques, materials, or technologies that were incorporated into your classroom teaching. Include any field trips or extended learning activities that took place outside of the classroom.)

Starting with my Fall 2011 ES104 lecture, I started implementing a more flexible system for allowing students to make up class activities if they needed to miss lecture on the day of the assignment. This largely included making lecture worksheets available on Moodle, posting any pertinent video clips on Moodle, and giving a 1 lecture "grace period" for turning in the assignment for full credit. This appears to have been well received by the students. I also think this strategy helped limit conduct issues within the classroom (i.e. a student that really did not want to attend that day due to personal issues could still complete the assignments for their full credit value) and made a more open and learning centered environment within the lecture hall. Test scores appeared to go up due to this change (see section C below).

C. Program Assessment Activities
(Provide a bulleted summary of assessment activities that you have been involved within the past year, e.g. embedded assessments, exit exams, assessment planning, assessment-based curriculum changes, related professional development, etc.)

To evaluate the changes I made to the lecture section I described above, I decided to use the exact same exams that I used in ES104 during Fall 2010. This allowed a side-by-side comparison of students from the two years. Overall, my exam scores went up by approximately 6% and the Fall 2011 group was the highest scoring ES104 group that I have seen since starting in January 2008.

These results were somewhat tempered by my ES104 results in the following term. During Winter 2012, I also taught ES104 lecture using the exact same lecture materials and approach, but with newly created exams. This group only scored 2-3% higher than the Fall 2010 results. That raises questions as to whether the Fall 2011 group was particularly exceptional (it did include ~3 students that had Earth Science as a minor) or if some students had access to prior exams from friends or internet web sites. These results are still encouraging and I find classroom management to be better, but further evaluation is something I will continue to pursue.

D. Curriculum Changes
(Provide a bulleted summary of curriculum changes that you were involved within the past year.)

II. RESEARCH & SCHOLARSHIP

A. Research Projects
(Provide a bulleted summary of research projects you have worked on this year. Indicate any student involvement or collaborations in these projects.)

- Completed PhD Dissertation: Toward Establishing the Validity of the Resource Interpreter's Self-Efficacy Instrument. This research project focused on developing a standardized survey that would allow researchers insight into whether resource interpreters (aka park rangers) feel that their interactions with the public are effective. Dissertation successfully defended on November 4, 2011. Committee members: Larry Enochs (Chair), Robert Lillie, John Falk, Nam-Hwa Kang, Misti Lambert.

B. Peer-Reviewed Publications

Kang, N.K., DeChenne, S.E., & Smith, G.
2012 Inquiry Learning of High School Students Through a Problem-based Environmental Health Science Curriculum. *School Science and Mathematics* 112(3): 147-158.

C. Presentations and Refereed Abstracts

D. Grant Writing Activities
(Include proposal title, authors, funding source, amount, and status on funding request.)

E. Professional Certifications, Licenses, Other Specialty Credentials

III. FACULTY SERVICE

A. Student Advising
(Provide a bulleted list of activities related to academic advising, number of advisees, programs in which you advise, etc.)

WOU Institutional Service
(Provide a bulleted list of department-division-university service duties that you have carried out, e.g., scheduling, recruiting activities, student clubs, search committees, faculty senate, mentoring, etc.)

C. Leadership, Professional Service and Community Outreach
(List professional service completed this past year, include consulting activities and leadership roles.)

2012 (April) – Oregon Science Olympiad, Monmouth, OR – I served as the event supervisor for the Dynamic Planet section of the Olympiad. This included designing an appropriate challenge for middle school and high school students regarding the geology of rivers, groundwater, and lakes. Ialso judged the results.

D. Professional Societies
(List memberships in professional organizations.)

Geological Society of America
American Educational Research Association
National Association for Interpretation

IV. HONORS AND AWARDS
(Provide a bulleted list of honors and awards that you received in the past academic year.)

V. CHALLENGES AND PLANS FOR PROFESSIONAL GROWTH
(Provide a bulleted list of challenges and barriers to achievement in your role as a faculty member at WOU. Also list any plans for professional growth and/or mitigation of challenges.)

Though my student evaluations have been fairly good, I feel it is time to restructure some of my lecture activities. I would still like to incorporate the "clickers" into my lecture, but I feel that it needs to be done judiciously and with appropriate questions. I have already incorporated some questions into the lecture using a flash card system, but it seems like many of the questions are too easy or too difficult. In addition to providing formative assessment in the classroom, it is hoped that the questions will also be thought provoking and potentially allow students to engage in meta-cognitive self-assessment as to whether their study strategies are working.

I would also like to restructure the lectures so that each lecture starts with fundamental questions about the world and how we can get answers to those questions. Some of my lectures are already organized this way and my impression is that those lectures are the best ones for student engagement. In contrast, when the students just feel they are learning content but are not curious about why they are learning it, engagement is much more difficult. Also to this end, I would like to incorporate more 1-5 minute video clips within my lectures that are pertinent to the material. I find that they help break up the lecture and re-focus the students on the task/question at hand.

VI. MISCELLANEOUS (Provide a bulleted list of any other items not covered above.)

VII. PUBLIC RELATIONS AND PROMOTIONAL HIGHLIGHTS
(From your above summary, list the highlights of your faculty scholarship, student scholarship and service-related activities that you would like to see prominently promoted on the university web site, in news media, campus brochures, newsletters, and other public-relations materials. Provide a short blurb for each item with any recommendations on how you would like news of your work disseminated.)