

Appendix 1.

Responses to Questions in Appendix D, University of Hawaii Executive Policy E5.201 Approval of New Academic Programs and Review of Provision Academic Programs

(1) Is the program organized to meet its objectives?

The TPSS Department is a research, education, and outreach unit for tropical agriculture and landscape plant science and production, food safety, and soil science. TPSS offers a Bachelor of Science (BS) degree, an Undergraduate Certificate in Agribusiness Management, and Master of Science (MS) and Doctor of Philosophy (PhD) degrees. As the undergraduate program is the specific academic program being considered for advancement from provisional to established status, this response will focus on TPSS's BS program.

During the 2005-2006 academic year, there were 40 declared majors in TPSS's BS program. TPSS undergraduates select from three options: The Plant Sciences and Genetics option prepares students for careers in research. The Production and Management option involves the study of Hawaii's unique soils, insects and diseases that affect plants in the tropical environment, and familiarizes students with business skills in management, personnel administration, marketing and accounting. The Environmental Soil Sciences option involves the study of land and soil resources and their effective management.

The overall goal of the Tropical Plant and Soil Sciences (TPSS) Department is to foster an integrated and interdisciplinary approach to education and prepare students to assume roles as leaders and decision-makers, and pursue advanced education in plant and soil sciences. The specific goals (called "objectives" in Appendix D, University of Hawaii Executive Policy E5.201) of TPSS's academic program, which continue to be updated, are to produce graduates who:

- Communicate appropriately and clearly in a variety of oral and written forms to both professional and non-technical audiences.
- Apply analytical, problem-solving, business management and technological skills to everyday and discipline-related challenges.
- Develop positive and ethical personal characteristics (e.g., honesty, integrity, and a moral character) and appropriate interpersonal and leadership skills.
- Gain a broad understanding of real world experiences and global issues through the exploration of and involvement in career-related opportunities.
- Integrate discipline- and thematic-specific knowledge of basic and applied plant and soil sciences to its application, analysis, and evaluation in the production, management, and improvement of managed and natural ecosystems.
- Demonstrate an awareness of practices that minimize damage to the environment and ensures a safe food supply.
- Perform competitively in the diverse professions available to them and take advantage of the opportunities afforded by changing situations.

TPSS's academic program, including its teaching, advising and curriculum, are well organized to meet these goals and objectives.

(2) Is the program meeting its learning objectives for students?

The TPSS program has identified the following 13 student learning outcomes that align with the goals (“objectives”) listed in (1), and has engaged its faculty in building its assessment infrastructure. The student learning outcomes are:

- Given the opportunity to speak, the student will be able to exhibit an acceptable level of poise, confidence, organization, use of visuals and subject knowledge.
- Given the opportunity to produce written materials for professional and non-technical audiences, the student will be able to write in a logical manner, use correct grammar, and utilize available information resources appropriate to those audiences.
- Given the opportunity to be interviewed, the student will be able to listen to and respond to questions and situations posed in order to effectively communicate his/her knowledge and experience.
- Apply analytical, problem-solving, business management and technological skills to everyday and discipline-related challenges.
- Develop positive and ethical personal characteristics (e.g., honesty, integrity, and a moral character) and appropriate interpersonal and leadership skills.
- Gain a broad understanding of real world experiences and global issues through the exploration of and involvement in career-related opportunities.
- Understand the basis for crop responses to environmental conditions and biological pressures.
- Know the edaphic, chemical, and soil biology factors that influence plant growth and contribute to the health of the soil environment.
- Understand plant growth and developmental processes, genetics, and plant improvement systems.
- Develop the capacity to analyze, evaluate, and apply the knowledge acquired to the service of society’s needs with respect to plant production systems, food safety, and environmental management.
- Be acquainted with the diverse career options and requirements for employment in the plant and soil sciences.
- Be able to analyze and apply knowledge of soil classification, chemistry, biology, and physical properties to appropriate soil management techniques that contribute to the health and well-being of crop plants and the environment.
- Be able to apply their knowledge and technical skills to solve problems in the production and management of plants and soil-plant relationships using diverse approaches and technologies.

The TPSS Department has assessed student competencies and skills in 13 courses in relation to the 13 student learning outcomes listed above. Eleven faculty members participated in the assessment wherein the faculty ranked how well the students achieved certain competencies and skills on a scale of 1 to 5, with 5 = exceeds expectations and 1 = poorly demonstrated. Faculty based their assessments on term papers, oral presentations, exams, lab reports, and class participation, and completed a rubric (which is presented at the end of this document) for evaluating each student. The criterion for acceptable performance was a score of at least 3.0.

The results of the assessment, using the rubric, are summarized in Table 1.

Table 1. Distribution of the percentage of TPSS courses reporting mean ratings that reflect student performance with respect to TPSS student learning outcomes during the 2001-2003 period.

Outcomes	No. courses	5.0-4.6	4.5-4.1	4.0-3.6	3.5-3.1	3.0-2.6	2.5-2.1	<2.0
A.1.a	21		14.3	23.8	38.1	19.0	4.8	
A.1.b	20		15.0	25.0	35.0	25.0		
A.1.c	19	5.2	5.2	36.8	31.5	21.0		
A.2	18		11.1	33.3	27.8	22.2	5.6	
A.3	17	11.8	17.6	29.4	41.2			
A.4	16		12.5	25.0	43.7	18.8		
B.1.a	21		4.4	28.6	38.1	28.5		
B.1.b	10			50.0	20.0	30.0		
B.1.c	17			35.3	5.9	58.8		
B.2.a	21			28.6	42.8	28.6		
B.3.a	19			36.8	31.6	26.3	5.2	
B.3.b	10			40.0	20.0	40.0		
B.3.c	20			25	50.0	25.0		

Rating Scale: 5 = exceeds expectations: 3 = meets expectations: 1 = poorly demonstrated

More than 60% of the assessment scores met or exceeded expectations, indicating that students largely are achieving the learning outcomes established by the TPSS program. The TPSS program will continue to assess its undergraduate program, refine its assessment process with more effective assessment tools, and use the findings of the assessment to improve its curriculum, with emphasis on reducing the minority of TPSS's course offerings that do not meet expectations

(3) Are program resources adequate?

The TPSS Department has adequate resources to manage the program. Personnel in the TPSS Department include 39 faculty and 28 staff members. Faculty positions are distributed among 18 researchers, 13 extension agents, and 8 specialists. Many have joint specialist/researcher appointments. There are no 100% "I" positions in the department. Instruction is delivered by 3.7 instructional FTE, of which 2.3 FTE support the undergraduate program and 1.4 FTE support the graduate program. The TPSS faculty presently meet the instructional needs of the department, though recent and projected retirements make hiring a priority for the department. The department chair held meetings with the dean to discuss the definitions of workload distribution within the different faculty categories (I, R, E) in the College.

TPSS has an array of facilities to support its academic goals and research projects. TPSS obtains funding from various agencies and organizations including but not limited to the US Department of Agriculture, US Agency for International Development, National

Resource Conservation Service, Hawaii Department of Agriculture, County of Hawaii, Hawaii Agriculture Research Center, Hawaii Island Economic Development Board, Oceanic Institute Center for Tropical and Subtropical Aquaculture, and American Farmland Trust Inc. During 2000-2005, TPSS obtained more than \$22 million in grants and contracts. Though the extramural funding is directed at research, the graduate and undergraduate academic programs benefit from laboratory and field experiences involved in the research.

(4) Is the program efficient?

The TPSS academic program's costs and revenues template and accompanying narrative show that the program is efficient.

(5) Evidence of program quality.

TPSS's comprehensive undergraduate program affords students the opportunity to study molecules to whole plants to managed or natural ecosystems, thus providing backgrounds to a host of career prospects. Students majoring in TPSS prepare for careers including plant production and management, plant breeding and genetics, services, marketing, extension research, and teaching. Graduates trained in these areas have embarked on successful careers in international organizations and governmental agencies, in ecological and environmental protection, in agricultural extension, in individual entrepreneurship including farming, and as middle and upper management in corporate agriculture.

As described in (2) above, using the rubric established by the TPSS faculty, the TPSS Department assessed student competencies and skills in 13 courses in relation to 13 student learning outcomes. Though only a few rotations of courses were included in the assessment, the results indicate that students largely are meeting expectations.

A UH Manoa review of the TPSS program in 2006-2007 included a survey of student perceptions in 21 different areas of student satisfaction in the TPSS academic program. A total of 27 undergraduate students responded to the student questionnaire. Students responded favorably to 17 out of 21 questions in the survey. Students expressed confidence in faculty expertise and high regard for their research and were especially positive about the guest lecturers from industry and the field trips. Students were genuinely enthusiastic about agriculture as a field. They appreciated the special opportunities afforded by fieldwork, internships and teamwork, and felt that they would find good jobs at graduation.

(6) Are program outcomes compatible with the objectives?

The rubric for student learning outcomes, presented at the end of this document, maps student learning outcomes against TPSS program goals ("objectives"). The alignment between outcomes and goals/objectives is very good. For example, Goal A.1 of TPSS's academic program seeks to produce graduates who are able to "communicate appropriately and clearly in a variety of oral and written forms to both professional and non-technical audiences." The first three student learning outcomes, A.1.a, A.1.b, A.1.c, are directly related to that goal/objective, i.e.,

- Given the opportunity to speak, the student will be able to exhibit an acceptable

- level of poise, confidence, organization, use of visuals and subject knowledge.
- Given the opportunity to produce written materials for professional and non-technical audiences, the student will be able to write in a logical manner, use correct grammar, and utilize available information resources appropriate to those audiences.
 - Given the opportunity to be interviewed, the student will be able to listen to and respond to questions and situations posed in order to effectively communicate his/her knowledge and experience.

As another example, Goal B.1 seeks to produce graduates who are able to “integrate discipline- and thematic-specific knowledge of basic and applied plant and soil sciences to its application, analysis, and evaluation in the production, management, and improvement of managed and natural ecosystems.” The corresponding student learning outcomes, B.1.a, B.1.b, B.1.c, are:

- Understand the basis for crop responses to environmental conditions and biological pressures.
- Know the edaphic, chemical, and soil biology factors that influence plant growth and contribute to the health of the soil environment.
- Understand plant growth and developmental processes, genetics, and plant improvement systems.

These three outcomes align very well with the corresponding goal/objective.

(7) Are program objectives still appropriate functions of the college and university?

The program objectives are still appropriate to the functions of UH Manoa and implements UH Manoa’s strategic vision of “building on our strengths related to our natural environment and tradition of outstanding Asia/Pacific scholarship.” The mission of the department is to marshal its intellectual resources to serve the state and the Asia/Pacific region through teaching, research and outreach. The faculty is committed to meeting this challenge with programs directed toward improved plant production, food safety and marketing systems for enhanced economic opportunity in the state and the Asia/Pacific region.

STUDENT OUTCOME RUBRIC

TPSS Course No. _____

Sem/Year _____

Student's name _____

Date Completed _____

Goals/ Outcomes	Exceeds expectations 5	4	Achieves expectations 3	2	Poorly demonstrated 1/0	Strengths/ Weaknesses
Goal A.1 Communicate appropriately and clearly in a variety of oral and written forms to both professional and non-technical audiences.						
A.1.a Given the opportunity to speak, the student will be able to exhibit an acceptable level of poise, confidence, organization, use of visuals and subject knowledge.						
A.1.b Given the opportunity to produce written materials for professional and non-technical audiences, the student will be able to write in a logical manner, use correct grammar, and utilize available information resources appropriate to those audiences.						
A.1.c Given the opportunity to be interviewed, the student will be able to listen to and respond to questions and situations posed in order to effectively communicate his/her knowledge and experience.						
Goal A.2 Apply analytical, problem-solving, business management and technological skills to everyday and discipline-related challenges.						
Goal A.3 Develop positive and ethical personal characteristics (e.g., honesty, integrity, and a moral character) and appropriate interpersonal and leadership skills.						
Goal A.4 Gain a broad understanding of real world experiences and global issues through the exploration of and involvement in career-related opportunities.						

Goals/ Outcomes	Exceeds expectations 5	4	Achieves expectations 3	2	Poorly demonstrated 1/0	Strengths/ Weaknesses
Goal B.1 Integrate discipline- and thematic-specific knowledge of basic and applied plant and soil sciences to its application, analysis, and evaluation in the production, management, and improvement of managed and natural ecosystems.						
B.1.a Understand the basis for crop responses to environmental conditions and biological pressures.						
B.1.b Know the edaphic, chemical, and soil biology factors that influence plant growth and contribute to the health of the soil environment.						
B.1.c Understand plant growth and developmental processes, genetics, and plant improvement systems.						
Goal B.2 Demonstrate an awareness of practices that minimize damage to the environment and ensures a safe food supply.						
B.2.a Develop the capacity to analyze, evaluate, and apply the knowledge acquired to the service of society's needs with respect to plant production systems, food safety, and environmental management.						
Goal B.3 Perform competitively in the diverse professions available to them and take advantage of the opportunities afforded by changing situations.						
B.3.a Be acquainted with the diverse career options and requirements for employment in the plant and soil sciences.						
B.3.b Be able to analyze and apply knowledge of soil classification, chemistry, biology, and physical properties to appropriate soil management techniques that contribute to the health and well-being of crop plants and the environment.						
B.3.c Be able to apply their knowledge and technical skills to solve problems in the production and management of plants and soil-plant relationships using diverse approaches and technologies.						