



**Identified Competency Focus Areas and Selected  
Courses for National Exit Examination:**

**Program: Bachelor of Science in Plant Sciences**

**By: Yigrem Mengist  
University of Gondar**

*Courses and Competencies I&II*

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Courses and Competencies Identified for Exit Exam 2015 (First Draft)

## 1. INTRODUCTION

Agriculture is the back bone of Ethiopian economy accounting for 40% of the GDP, 80% of the exports and about 75% of the work force. The country has variable agro-ecologies, social environments and with diversified plant species being centre of origin and diversity of many crops and vegetables as well. However, in Ethiopia, current agricultural productivity is below world average due to dependency on rain fed production, degradation of natural resource base, climate change, shortage of improved varieties, plant pests, shortage of inputs, and inadequacy of recommended production packages. Thus, there is an increasing demand from the stakeholders and the country at large for trained/highly qualified and skilled professionals to take care of and tackle the multifaceted problems related to agriculture and development of natural resources.

The main idea behind an exit exam is the need to check whether students have attained the intended learning outcomes of the programs they have attended. In fact, exit exams can offer several potential benefits if designed as a reliable measures of students learning. There are those who argue that the competition and transparency encouraged through exit exams can help raise the decline quality of education and provide the chance for restoring confidence in a given higher education system. Therefore, training and graduating knowledgeable, skilled and all rounded labour is critically required in the field of plant sciences. Therefore, the country needs to produce large number of competent professionals well equipped with scientific knowledge and practical skills of identifying production problems of field crops and horticultural crops along with verified management options.

Currently to endorse graduation of plant science professionals, ministry of education has proposed to implement exit exam for 2015EC graduating students to test their knowledge, skill and attitude so that verify the quality of education. Accordingly, candidates of BSc. degree in Plant Sciences will evaluated for competencies of five thematic areas namely crop improvements, agronomy, plant protection, horticultural Crops Production and management and research and skills competencies covering 14 different courses.

### **1.1. Objectives of Exit Examination**

The national Plant Science exit exam shall have the following objectives will able to;

- ❖ Produce skilled and competent manpower to national and international market
- ❖ Assess students' educational achievement in major areas of Plant Science
- ❖ Ensure whether the graduation profile of Plant Science curriculum have achieved at least common standards of knowledge and practical skills
- ❖ Facilitate the efforts of students to revise the core learning outcomes of the courses covered by the exit examination
- ❖ Ensure all graduates from Higher Educational Institutes satisfy the requirements of the labor market and employability through the national wide implementation of competency-based exit exam
- ❖ Create competitive spirit among Plant Science departments in Ethiopia with the vies to encouraging them to give due attention to the national standards

### **1.2. Significance of the Document**

It is important to set competency areas of the subject matter (program) in order to measure the how much graduates are acquired with skills, knowledge and attitudes. The following shows us the significance or setting competencies and identifying core courses of the program;

- ❖ To set competencies that helps to assess the basic skills, knowledge and attitude of graduating students;
- ❖ To systematically identify the core courses which will be included the exit exam.

## **2. EXPECTED PROFILES OF GRADUATES**

Graduates of the Plant Sciences students are well equipped with knowledge, skills and attitude needed to:

- ❖ Apply basic plant breeding methods and develop crop varieties by applying conventional and biotechnological tools.
- ❖ Produce and handle quality seed under formal and informal seed systems and undertake problem-solving research in crop improvement.
- ❖ Practice basic concepts of biotechnology for plants improvements.
- ❖ Test seed germination, quality, purity and viability at laboratory condition.
- ❖ Identify soil fertility problems and design and implement corrective possible measures

- ❖ Evaluate biological, physical, and chemical properties of soil and their effects on nutrient availability to plants.
- ❖ Apply appropriate agronomic practices for specific crop species and environment setting
- ❖ Plan and execute agricultural field operations for proper crop production;
- ❖ Identify economically important crops in the field (at seed, germination, vegetative stages; flowering etc.).
- ❖ Identify the response of plants physiology to biotic and a biotic stress; and apply principles of plan physiology in crop production and management.
- ❖ Measure moisture availability, estimate crop water requirement and apply appropriate irrigation practices;
- ❖ Provide technical support to farmers, entrepreneurs and others investor in irrigation crop production systems.
- ❖ Identify diseases, insect and weeds of economically important crops;
- ❖ Manage diseases, insect and weeds of economic importance crops and thereby reduce losses due to pests;
- ❖ Apply, use and operate laboratory and field equipment necessary in his/her field of specialization.
- ❖ Handle, calibrate, formulate and manage agricultural pesticides properly.
- ❖ Provide technical support to farmers, and others investor regarding to safety precaution during chemical application.
- ❖ Identify horticultural crops and manage its production system
- ❖ Manage fruit and vegetables farms problems associated with post-harvest losses of horticultural crops.
- ❖ Establish horticultural crops nursery site
- ❖ Identify and prioritize researchable problems in plant sciences;
- ❖ Can layout basic experimental designs, collect and entry experimental data
- ❖ Analysis and interpret some statistical experimental data;
- ❖ Write some scientific reports in the field of plant sciences; and present research findings

### **3. COMPETENCIES AND LEARNING OUTCOMES**

Competencies and learning outcomes are two related educational terms. A general statement that use of desired knowledge, skills, behaviors, and abilities. Competencies often define specific

applied skills and knowledge enable people to successfully perform specific functions in a work or educational setting. Learning outcomes are measurable statements that articulate at the beginning what students should know, be able to do, or value because of taking a course or completing a program. The profession of plant sciences requires a wide range of qualities such as versatility, impartiality, openness, flexibility, persistence, etc. In general, the graduate in their profession will have the following competencies and learning outcomes to uplift the living standard of the rural poor farmers. Upon completion of the program, the graduate students will be able to achieve the following competencies;

### **3.1. Knowledge**

Graduate students in Plant Sciences program will be able to -

- ❖ Identify the crop improvement methods, maintain the quality of the product and disseminate for farmers/ producers;
- ❖ Identify and analyse problems related to plant sciences and devise appropriate solutions;
- ❖ Disseminate new and improved technologies for the benefit of the society
- ❖ Assist in planning, implementing, monitoring and evaluating programs/projects related to crop production, protection and management in sustainable base;
- ❖ Design and conduct trainings for specialized skill and knowledge in areas of plant sciences;
- ❖ Formulate and advocate crop production development policies and strategies
- ❖ Promote and disseminate agricultural technology through training of farmers and extension workers;
- ❖ Involve in research undertakings in the areas of crop production, protection, and natural resources;
- ❖ Identify sustainability issues in relation to crop production, protection and value addition
- ❖ Identify different income generating mechanisms related to crop production and management
- ❖ Providing advice on agricultural production, marketing, post-harvest production and other profitable technologies for farmers; and
- ❖ Provide effective and efficient consultancy and advisory services on crop production and management practices;
- ❖ Manages agricultural experimental data.

### **3.2. Skill**

Graduate students in Plant Sciences program will be able to -

- ❖ Build teams comprising of different fields of expertise to address complex agricultural specifically crop production problems in a multi-disciplinary way;
- ❖ Implement different income generating mechanisms related to crop production and management;
- ❖ Generate self-employment, establish and manage private enterprises related to their profession and related fields;
- ❖ Test, select and recommend superior crop varieties;
- ❖ Design and layout field experimental unit and conduct research in the area of plant sciences
- ❖ Apply agricultural pesticides with adequate safety measures;
- ❖ Manage and calibrate field and laboratory equipment.

### **3.3. Attitude**

Graduate students in Plant Sciences program will be able to;

- ❖ Possesses capabilities to positively influence the community and serve as an agent of change in matters pertaining to his/her field;
- ❖ Develop sense of passion to plan, implement, monitor and evaluate projects and programs related to agricultural development initiatives;
- ❖ Develop professional ethics and sense of accountability in line with agricultural production and productivity;
- ❖ Creates awareness on the importance of crop production and value addition to Ethiopian economy, job opportunities and social stability;
- ❖ Empower initiatives of development interventions to enhance production and productivity of crops;
- ❖ Creates awareness on the importance of strong linkages among researcher, extension agent and farmers for improvement of technology dissemination;

## **4. COURSE TO BE INCLUDED IN THE EXIT EXAM**

In harmonized curriculum plant sciences students has taken 62-64 courses until to graduation. In the meantime, the ministry of education has supposed to implement exit exam in 2015EC graduation students. To be test the student competency (knowledge, skill and attitude) 10-15 major courses has to be included on exit exam. The basis for course selection that included on

the exit exam is focusing the major course on the program, and it provide a good opportunities that we test the students' knowledge, and skill during study leave. List of courses to be included in the exit exam are;

- 1) Plant Breeding
- 2) Research Methods in Plant Sciences
- 3) Plant Physiology
- 4) Fruit Crops Production and Processing
- 5) Agricultural Entomology
- 6) Weeds and Their Management
- 7) Plant Pathology
- 8) Seed Science and Technology
- 9) Principles, Design and Analysis of Agricultural Experiments
- 10) Introduction to Plant Biotechnology
- 11) Soil Fertility and Plant Nutrition
- 12) Vegetable Crops Production and Management
- 13) Field Crops Production and Management
- 14) Principles and Practices of Irrigation

## 5. CATEGORIZING COURSES IN TO THEMES

Theme	Name of courses	Course code	ECTS/Credit Hours
<b>Theme 1: Crop Improvement</b>	Plant Breeding	PlSc311	5/3
	Seed Science and Technology	PlSc342	3/2
	Introduction to Plant Biotechnology	PlSc362	3/2
<b>Theme 2: Agronomy</b>	Plant Physiology	PlSc321	5/3
	Soil Fertility and Plant Nutrition	PlSc372	5/3
	Field Crops Production and Management	PlSc451	5/3
	Principles and Practices of Irrigation	PlSc461	3/2



<b>Theme 3: Plant Protection</b>	Agricultural Entomology	PlSc331	5/3
	Weeds and Their Management	PlSc332	5/3
	Plant Pathology	PlSc341	5/3
<b>Theme 4: Horticultural Crops Production and Management</b>	Fruit Crops Production and Processing	PlSc322	5/3
	Vegetable Crops Production and Management	PlSc431	5/3
<b>Theme 5: Research Tools and Skills</b>	Research Methods in Plant Sciences	PlSc312	3/2
	Principles, Design and Analysis of Agricultural Experiments	PlSc351	5/3
<b>Total</b>			<b>59/36</b>

## 6. CONCLUSION

In conclusion, in the department of plant sciences 62 to 64 courses has given until to graduation. Currently the ministry of education has supposed to implement the national exit examination 2015EC graduation students to be measure the learning outputs of a program as a whole. The main idea behind an exit exam is the need to check whether students have attained the intended learning outcomes of the programs they have attended. The primary purpose of the exit exam is to assess student's educational achievement in the courses in their major area of program study. The exam is supposed to measure the learning outcomes of the program as a whole not the individual courses.

From this point of view finally in this document 5 categories and 15 course are selected which is

included on national exit examination to be test the student competency. Exam questions based on the selected courses to be included on the exit exam it should be desired knowledge, skills, and behaviours of a student graduating from a program. The exit exam shall serves, as a quality standard of plant sciences graduates with knowledge, skill and attitude competencies to certify and license graduates to work in their profession and to be registered in the national professional registry system.

**Ministry of Education**  
**Higher Education Development sub-sector**  
**Competency and Core Course Identification Validation Workshop for**  
**national Exit Examination**  
**Participants' List**  
**Nehassie 03-04/2014 E.C (August 8/2022 G.C)**

**Band:- 04** \_\_\_\_\_

**Program:- Bachelor of Sciences In Plant Sciences**

No.	Name of the Participant	University	Position	Role in the Workshop	Signature
1	Yigrem Mengist	University of Gondar	Assistant Professor	Writer	
2	Alemnesh Bekele	Haramaya University	Lecturer	Evaluator	

3	Dr. Seid Hussen	Wollo University	Assistant Professor	Evaluator	
4	Dr. Temesgen Matis	Jimma University	Assistant Professor	Evaluator	
5	Dr. Gudeta Nepir	Ambo Univrsity	Assistant Professor	Evaluator	
6	Amhaeyesus Belete	Debrebrihan University	Lecturer	Evaluator	
7	Dr. Abaynew Jemal	Bahirdar Univer	Assistant Professor	Evaluator	
8	Bogale Mire	Selale University	Lecturer	Evaluator	

Coordinated by:- \_\_\_\_\_  
Date:- \_\_\_\_\_  
Signature:- \_\_\_\_\_

Approved by:- \_\_\_\_\_  
Date:- \_\_\_\_\_  
Signature:- \_\_\_\_\_

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