Seed Pathology

Obligatory module or **Selective module**	**Seed Pathology**	**PNH 2212**
Semester	IV	
Module level	Undergraduate	
Module Coordinator	Dr.Ir. Sri Sulandari, SU	
Lecturer(s)	Dr.Ir. Sri Sulandari, S.U. Dr. Suryanti, S.P., M.P. Ani Widiastuti, S.P., M.P., Ph.D	
Type of Module	Lecture: 1 hour and 40 minutes Laboratory Works	
Status	C (compulsory courses)	
Exam	Writing Exams, Assignments, Practicum Reports and Practical Response	
Number of participants	64	
Credit Points:	2/1 (5.02 ECTS)	
Description:	This course discusses the importance of seed health in agriculture. Types of pathogens carried by seed. Mechanisms for the development and transmission of pathogens in plant tissue to seeds, and from seeds to plants. Methods for testing seed health. Management of seed-producing plants, seed storage and seed treatment.	
Academic goal (competency):	After following and passing this course, students are expected to understand the importance of using healthy seeds / seeds. Understand the various pathogens in seeds and the mechanism of infection and transmission. Able to perform various methods of testing seed health. Able to manage seed-borne diseases in seed-producing plants, be able to store seeds properly and correctly and be able to carry out a variety of seed treatments to be pathogen free.	
Course outcomes: CO1 =Students are able to understand and explain the importance of seed health and various types of seed-borne pathogens. CO2 = Students are able to understand and explain various ways of transmitting disease through seeds in other ways and the importance of transmitting diseases through seeds, their impact on agriculture. CO3 = students are able to understand and explain about the penetration of pathogens into seeds: Various kinds of pathogens enter into the seeds. CO4 = Students are able to understand and explain the mechanism of pathogen infection in seeds: Location of infection and pathogen contamination in / in seeds and influencing factors. CO5 = Students are able to understand and explain the transmission of diseases from plants to seeds: The development of diseases from plants to seeds.		

CO6 = Students are able to understand and explain the transmission of disease from seeds to plants: Transmission of diseases from seeds that carry pathogens to plants. CO7 = Students are able to understand and explain the ability to live longevity of seed-borne potogens: Factors that cause pathogens to be able to live long in seeds. CO8 = Students are able to understand and explain the spread of seed-borne pathogens: Spread of disease (monocyclic, polycyclic), survival of pahogens outside of seeds. CO9 = Students are able to understand and explain how to detect pathogens carried by seeds and seed health. CO10 = Student are able to understand and explain how to control seed-borne diseases in exclusion and inoculum reduction. CO11 = Students are able to understand and explain how to control seed-borne diseases in a technical culture. CO12 = Students are able to understand and explain physical & chemical control of seed-borne diseases. CO13 = Students are able to comprehend and explain comprehensively about pathogens carried by fungi and bacteria in the form of works then disseminated in groups or teams. CO14 = Students are able to comprehend and explain comprehensively about the pathogens carried by aunt in the form of viruses and sub-microscopic organisms as well as nematodes in the form of written papers and then disseminated in groups or teams.
Contents: 1. Introduction to Subjects by explaining about : a. Syllabus, materials, textbooks, components and methods of evaluation, student assignments. b. Applicable regulations. c. Significance of Seed Pathology. 2. Comparison of disease transmission through seeds in other ways: The importance of transmission of disease through seeds, their impact on agriculture 3. Penetration of pathogens to seeds: Types of pathogens into the seeds 4. Pathogen infection in seeds: Location of infection and pathogen contamination in / in seeds and influencing factors. 5. Transmission of diseases from plants to seeds: Development of diseases from plants to seeds. 6. Transmission of diseases from seeds to plants: Transmission of diseases from seeds that carry pathogens to plants. 7. Seed-borne longevity (longevity): Factors that cause pathogens to live long in seeds 8. Spread of seed-borne pathogens: Spread of disease (monocyclic, polycyclic), survival of pahogens outside the seed 9. Detection of seed-borne pathogens and seed health 10. Control: Control of the disease carried by the exclusion and reduction of the inoculum 11. Control: Control of seed-borne diseases in a technical culture 12. Control: Control of disease carried chemically & chemically 13. Independent assignments and seed-borne group bacterial seminars 14. Self-service and seminar groups of viruses and mocroscopic organisms carried by seed
Which previous course required? Plant Protection, Phytopathology

Literature:

a. **Textbooks:**

1. Neergaard, P. 1977. *Seed Pathology*. Vol I. The MacMillan Press. London.
2. Maude, R. B. 1996. *Seedborne Diseases and Their Control*. CAB International, UK
3. Maryudani, Y.M.S. 2005. *Petunjuk Praktikum Patologi Benih*, Fak.Pertanian UGM, Yogyakarta
4. Annual Review of Phytopathology, 1966 (4): 311-343.

b. **Another reference (book):**

1. Agarwal, P.C., Mortensen, C. N. and S. B. Mathur. 1989. Seed-borne diseases and seed health testing of rice. Danish Government Inst. of Seed Pathology for Developing Countries, Hellerup, Copenhagen, Denmark
2. Ball, S. and J. Reeves 1992. Application of rapid techniques to seed health testing. Prospect and potential p: 193-207. In Duncan, J. M. and L.Torrance. *Techniques for rapid detection of plant pathogens.*
3. ISTA. 1999. Seed science and technology: International rules for seedTesting. Int. Seed Testing Association, Switzerland.

c. **Another reference (journal & internet):**

1. Phytopathology
2. Plant Disease
3. Jurnal Pelindungan Tanaman Indonesia
4. Hortikultura

Materials provided: PPT dan hand out

Requirements for exam: 80 % attendance

Teaching method(s) Classes : Special assignment related to the subject matters

Workload (hrs).

1. Theoretical of course:14 times
2. Lab work:7 times
3. Home studies: related to the chapter discussed in the class