

Project in Plant Science

Module name		Project in Plant Science				
Module level		2 nd year of Bachelor program				
Abbreviation, if applicable						
Sub-heading, if applicable						
Courses included in the module, if applicable		BI-2204 Project in Plant Science				
Semester/term		4 th Semester				
Module coordinator(s)		Dr. Rizkita Rachmi Esyanti				
Lecturer(s)		Dr. Iriawati Dr. Rizkita R Esyanti Dr. Trimurti H Wardani				
Language		Face-to – face in Class : Indonesian Slide/Text Book/Hands out : English				
Classification within the Curriculum		Compulsory courses for Bachelor Program in Biology				
Teaching format/ class hours per week during the semester		<p><i>2 parallel classes consists of 40 students / class:</i></p> <p><i>Lecture (Face to face lecture & student presentation): 40 %, practical class : 60 %</i></p> <ul style="list-style-type: none"> • Lecture : 1 hour x 7 weeks • Practical : 4 hours x 6 weeks • Small research project : 5 hours x 7 weeks • Exam : Midterm & Final , 2 x / semester 				
Workload	Total Workload	102 hours; 2 CU				
		Face to face teaching	Structured Activities	Independent Study	Exam	Total
	Practical class	31	35	32	4	102
Credit points		<i>Project in Plant Science : 2 CU</i>				
Requirements		<i>Fundamental Biology; Basic sciences (Math, Physics, Chemistry), Plant Structure and Development, Plant Physiology</i>				
Content	<p>This course is focused on developing various skill related to plant structure and function, during vegetative and reproductive growth period, and plant-environment interaction, ie.by doing experiments which exemplify concepts covered in and offer in module Plant Structure and Development, Plant Physiology experience in a variety of biological and biochemical techniques, from the cellular to whole plant level, with emphasis on experimental design.</p> <ol style="list-style-type: none"> 1. Structure of vegetative part related to role of plant cell, tissue and organ in the production of secondary metabolite; 2. structure of reproductive part related to application in plant reproduction 3. Role of nutrient on plant growth and development by introducing hydroponic system 4. influence of environment on plant by studying different soil type/character for plant growth and development, 5. influence of plant hormones in growth and development by using model in or application of plant tissue culture; 6. 6. small research project concerning many aspects of plant structure, function, growth and development (working in a group) 					

Learning goals/ competencies	<p><i>After completion of this module students are expected to be able to:</i></p> <p>Knowledge :</p> <ul style="list-style-type: none"> describe basic concept and applied technology in plant structure, function and development recognize and apply methods of investigation in plant cell, anatomical and physiological studies; learn how plants ‘work’ at the molecular, cellular, and whole plant levels; <p>Skill:</p> <ul style="list-style-type: none"> do experiments in cell to organism level, in plant structure, function and development design simple research project related to plant structure, function and development analyze small research project as well as to implement the basic knowledge and technology related to plant structure, function and development demonstrate the ability to gather and analyze data, present results graphically, interpret results and form conclusions present and communicate (oral and written or through visual media.) results of a small project design <p>Competences :</p> <ul style="list-style-type: none"> summarize basic elements of Plant Sciences; - explain the role of the plant sciences in the context of world main issues :food , human health, technological development and sustainable agriculture development; use collected scientific information from the domain of Plant Sciences to unravel a relevant (basic) problem case; apply critical thinking in evaluating and explaining plant biology issues 						
	Study/exam achievements	<i>Lecture (100 %)</i>					
			<i>Midterm exam I</i>	<i>Final exam</i>	<i>Assignment</i>	<i>Quizzes</i>	<i>Student class presentation</i>
<i>Lecture</i>		<i>30%</i>	<i>30%</i>	<i>15%</i>	<i>10%</i>	<i>15%</i>	<i>100%</i>
Forms of media	<i>Classical teaching tools:</i>		<i>white board/ chalk and talk, animation, power point,</i>				
	<i>Integrated teaching tools:</i>		<i>guest lectures</i>				
	<i>Digital teaching tools:</i>		<i>Web based : Blended learning</i>				
	<i>Problem based teaching tools:</i>		<i>Small research project</i>				
Literature	<ol style="list-style-type: none"> Dickinson, W. C. 2000. Integrative Plant Anatomy. Harcourt Academic Press, New York. Taiz, L. & Zeiger, E. 2006. Plant Physiology. 4th ed. Sinaueer Ass, Inc., Publ. Sunderland, Massachusetts Hopkins, W.G. & Huner, N.P.A. 2009. Introduction to Plant Physiology 4th. ed. John Wiley & Sons, Inc. Hamilton, G. 2011. Organic Gardening. Dorling Kindersley Publ. Trigiano, R.N. & D. J. Gray. 2005. Plant development and biotechnology. CRC Press. London 						