UNIVERSITAS NEGERI YOGYAKARTA

FACULTY OF MATHEMATICS AND SCIENCE
DEPARTMENT OF BIOLOGY EDUCATION

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Bachelor of Science in Biology **MODULE HANDBOOK**

Module name:	Developmental Biology of Plants
Module level, if applicable:	Undergraduate
Code:	BIM6219
Sub-heading,if applicable:	-
Classes,if applicable:	-
Semester:	Odd
Module coordinator:	Dra. Budiwati, M.Si.
Lecturer(s):	Dra. Budiwati, M.Si.' Dra. Ratnawati, M.Sc., Dr. Suyitno Al., M.S.
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsory Course
Teaching format / class hours per week during the semester:	100 minutes lectures, 120 minutes structured activities, and 120 minutes individual studyper week
Work load:	Total workload is 91 hours per semester which consists of 100 minuteslectures, 120 minutes structured activities, and 120 minutes individual study per weekfor 16 weeks.
Credit points:	2 SKS (3 ECTS)
Prerequisites course(s):	Plant Anatomy Plant Morphology
Perogram Learning Outcomes:	4. Comprehensively mastering Biology (core biology) to solve problems in the field of Biology (problem-solving) and to underlie the concepts of related sciences

<table>
<tr><td></td><td>6. Being adaptive, creative, innovative in applying the concepts of Biology and other related fields
9. Being able to work and create jobs/being an entrepreneur in the field of Biology
11. Possessing scientific skills to support the ability to speak in local, national, and international forums</td></tr>
<tr><td>Course Outcomes</td><td>Setelah mengikuti mata kuliah ini, mahasiswa diharapkan dapat:

CO1. Memahami siklus hidup tumbuhan Angiospermae secara umum dan membedakannya dengan kelompok tumbuhan yang lain (Gymnospermae, Pteridophhyta dan Bryophyta)
CO2.Menjelaskan struktur dan perkembangan alat reproduksi jantan angiospermae
CO3.Menjelaskan struktur dan perkembangan alat reproduksi betina angiospermae
CO4.Menjelaskan peranan polinasi dan fertilisasi dalam perkembangan tumbuhan
CO5. Menjelaskan perkembangan embrio dan nutrisi embrio
CO6. Menjelaskan struktur dan perkembangan biji
CO7.Menjelaskan macam poliembrioni dan faktor-faktor yang menyebabkan terjadinya poliembrioni
CO8. Menjelaskan berbagai tipe apomiksis dan contohnya pada angiospermae
CO9.Menjelaskan regulasi pada embriogenesis dan perkecambahan biji
CO10. Menganalisis peran cahaya pada perkembangan tumbuhan
CO11. Memahami proses induksi dan inisisasi pada proses pembungaan
CO12. Dapat mengkomunikasikan hasil belajarnya secara individu maupun berkelompok</td></tr>
<tr><td>Content:</td><td>Mata kuliah ini membicarakan tentang siklus hidup tumbuhan, struktur dan perkembangan organ reproduksi generatif dan vegetatif Angiospermae, membahas tentang regulasi pada proses perkembangan tumbuhan</td></tr>
<tr><td>Study/exam achievements:</td><td>The final mark will be weight as follow:

<table>
<tr><th>No</th><th>CO</th><th>Assessment Object</th><th>Assessment Technique</th><th>Weight</th></tr>
<tr><td>1</td><td>CO1 to CO12</td><td>Observed attitudes , knolwedge, and skills</td><td>Survey, test, rubrics and manuals</td><td>100%</td></tr>
<tr><td colspan="4">Total</td><td>100%</td></tr>
</table>
</td></tr>
<tr><td>Forms of media:</td><td>Real objects, model, multimedia</td></tr>
<tr><td>Reference:</td><td>A.Barbara Mo¨ ller and Dolf Weijers. 2009. Auxin Control of Embryo Patterning. Cold Spring Harb Perspect Biol doi: 10.1101/cshperspect.a001545</td></tr>
</table>

	B. Blazquez, M. 2000. Flower development pathways. *J. Cell Sci*. 113:3547-3548 C. Bhojwani, S.S. and S.P.Bhatnagar. 1999. **The Embryology of Angiosperms.** New Delhi : Vikas Publishing House PVT. Ltd. D. Foster and Gifford. 1974. ***Comparative Morphology***. San Francisco : Vicas Publisher E. Guangyuan, W., Zhihong, X., Tet-Fatt, C., and Nam-Hai, C**.** 1997. In vitro flowering of *Dendrobium candidum*. *Sci.in China*, 40 (1): 37-41. F. Ghassen Abid, Jean-Marie Jacquemin, Khaled Sassi, Yordan Muhovski, André Toussaint, Jean-Pierre Baudoin. 2010. Gene expression and genetic analysis during higher plants Embryogenesis. *Biotechnol. Agron. Soc. Environ.* **14**(4), 667-680 G. Hartmann, H.T., Kester, D.E, Davies, F.T. and R.L.Geneve. 1997. ***Plant Propagation-Principles and Practice.*** New Jersey: Prentice Hall International, Inc. H. Howell, S.H. 1998. *Molecular Genetics of Plant Development*. New York : Cambridge Univ. Press. 365 p. I. Johri,B.M. (Ed). 1984. **Embryology of Angiosperms.** Springer-Verlag : Berlin, Heidelberg. New York J. Lee, Sorcheng, Hui Cheng, Kathryn E. King, Weefuen Wang,, Yawen He, Alamgir Hussain,.Jane Lo, Nicholas P. Harberd, and Jinrong Peng. 2002. Gibberellin regulates *Arabidopsis* seed germination via *RGL2*, a *GAI/RGA*-like gene whose expression is up-regulated following imbibition. GENES & DEVELOPMENT 16:646–658 © 2002 byCold Spring Harbor LaboratoryPress ISSN 0890-9369/02 $5.00; www.genesdev.org K. Lersten, N.R. (2004). *Flowering Plant Embryology.* Victoria: Blackwell Publishing

PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
CO1				✓							
CO2				✓							
CO3				✓							
CO4				✓							
CO5				✓							
CO6				✓							
CO7				✓							
CO8				✓		✓					
CO9				✓		✓					
CO10				✓		✓					
CO11				✓		✓			✓		
CO12											✓