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|  | **UNIVERSITAS NEGERI YOGYAKARTA**FACULTY OF MATHEMATICS AND SCIENCEDEPARTMENT OF BIOLOGY EDUCATIONColombo 1 Street Yogyakarta 55281Phone: (0274)565411 Ext. 217, (0274)565411(Administration Office),fax (0274)548203Website:fmipa.uny.ac.id, E-mail :humas\_fmipa@uny.ac.id |

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| **Bachelor of Science in Biology**  | **MODULE HANDBOOK** |

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| Module name: | Laboratory work in Plant Morphology |
| Module level, if applicable: | Undergraduate |
| Code: | BIM6104 |
| 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., Drs. Sudarsono, 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: | 1 SKS (2 ECTS) |
| Prerequisites course(s): |  |
| Perogram Learning Outcomes: | 1. Comprehensively mastering Biology (core biology) to solve problems in the field of Biology (problem-solving) and to underlie the concepts of related sciences
2. Mastering the techniques and methodologies in Biology as well as familiar with the equipment used in Biology laboratories in order to get the knowledge of Biology (how we know what we know)
3. Being adaptive, creative, innovative in applying the concepts of Biology and other related fields
4. Being skillful in applying the techniques used in laboratories and daily life

9.Being able to work and create jobs/being an entrepreneur in the field of Biology10.Having managerial ability to supervise and evaluate workers and optimizing the networks in order to develop professionalism 11. Possessing scientific skills to support the ability to speak in local, national, and international forums  |
| Course Outcomes | Setelah melaksanakan praktikum ini mahasiswa dapat:CO1. mengidentifikasi struktur morfologi akar terkait dengan fungsinyaCO1. mengidentifikasi struktur morfologi batang terkait dengan fungsinyaCO2 mengidentifikasi struktur morfologi daun terkait dengan fungsinyaCO3 menjelaskan filotaksis daun dengan benarCO4 mengidentifikasi modifikasi akar, batang dan daunCO4 menganalisis bentuk-bentuk modifikasi dari struktur utama tumbuhan (akar, batang dan daun) dan manfaatnyaCO5.menjelaskan struktur morfologi bunga terkait dengan fungsinya CO6 menyusun formulasi bunga dengan benarCO7. mengidentifikasi berbagai tipe arsitektur pohonCO8 menjelaskan struktur buah dan menentukan tipe buah berdasarkan cirinyaCO9 menganalisis perkembangan bunga menjadi buah CO10 mnjelaskan struktur morfologi biji CO11. membedakan biji beralbumin dan non albumin,CO12. menganalisis bentuk respon morfologi batang, akar dan daun terhadap lingkungan |
| Content: | Mata praktikum morfologi tumbuhan merupakan kegiatan pengamatan struktur luar tumbuhan yang meliputi akar, batang dan daun serta modifikasinya yaitu rizoma, stolon, umbi, bunga, buah dan biji; analisis bentuk-bentuk modifikasi dari struktur utama tumbuhan; analisis perkembangan bunga menjadi buah baik sejati maupun semu; mengidentifikasi bentuk konstruksi dan arsitektur pohon, serta mengamati beberapa contoh bentuk respon morfologi batang, akar dan daun terhadap lingkungan. |
| Study/exam achievements: | The final mark will be weight as follow:

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| **No** | **CO** | **Assessment Object** | **Assessment Technique** | **Weight** |
| 1 | CO1 to CO12 | Observed attitudes , knolwedge, and skills  | Survey, test, rubrics and manuals  | 100% |
|  |  |  | Total | 100% |

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| Forms of media: | Real objects, model, multimedia |
| Reference: | 1. Foster and Gifford. 1974. ***Comparative Morphology***. San Francisco : Vicas Publisher
2. 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.
3. Hsuan Keng. 1987. *Malayan Seed Plants*. Singapore : University Press Singapore.

D.Jones Jr, S.B. and A.E. Luchsinger. 1987. *Plant Systematics*. International Edition. Singapore : Mc Graw-Hill.E. Lawrence, G.H.M. 1968. *Taxonomy of Vascular Plants.* New York: The Macmillan CompanyF. Raven, P.H., *et al*. 1992. *Biology of Plants.* New York : Worth Publishers.G. Tjitrosoepomo, G. 1990. **Morfologi Tumbuhan.** Yogyakarta: Gadjah Mada University Press.H. Tjitrosoepomo, G. 1991. **Taksonomi Tumbuhan (Spermatophyta).** Yogyakarta: Gadjah Mada University Press. |

**PLO and CO mapping**

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