

Module Descriptions

A **module** is a self-contained **learning unit** within a higher education program that includes thematically related courses and is assigned a **fixed number of credits**. It follows specific **learning objectives**, includes an **assessment component**, and contributes to achieving the qualifications of a degree program. In some countries, “modules” are also named “courses”.

Please provide a module description for each module. In addition to the compulsory and elective modules, this also includes credited internships and the final thesis.

Please summarize all module descriptions in one document (Module Handbook) and create a table of contents so that the modules can be found easily.

Module designation	<i>Horticultural Plant Technology</i>
Semester(s) in which the module is taught	5
Person responsible for the module	<i>Prof. Dr. Ir. Elkawakib Syam'un</i>
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory /elective / specialisation</i>
Teaching methods	<i>Face-to-face lectures and independent learning</i>
Workload (incl. contact hours, self-study hours)	1. Lectures: $2 \times 50 \times 16 = 1,600$ minutes (26.67 hrs) 2. Structured assignments: (total $2 \times 60 \times 16$) = 1,920 minutes (32 hrs) - Individual assignments: $2 \times 120 \times 3 = 720$ minutes (12 hrs) - Group assignments: $2 \times 120 \times 3 = 720$ minutes (12 hrs) - Quiz: $2 \times 15 \times 8 = 240$ minutes (4 hrs) - Discussion: $2 \times 30 \times 4 = 240$ minutes (4 hrs) 3. Independent study: (total $2 \times 60 \times 16$) = 1,920 minutes (32 hrs) - Accessing SIKOLA, participating in online discussion forums, reading materials, etc. 4. Practicum: (total: $1 \times 170 \times 16$) = 2,720 minutes (45.33 hrs) - Field work: $1 \times 170 \times 16 = 2,720$ minutes (45.33 hrs)
Credit points	<i>3 credits equal to 4.86 ECTS</i>
Required and recommended prerequisites for joining the module	-

Module objectives/intended learning outcomes	<i>In terms of knowledge:</i> - Student is able to understand, explain, and apply the principles and techniques of terrarium cultivation. - Student is able to understand, explain, and apply microgreen cultivation techniques. - Student is able to understand, explain, and apply vertical farming, hydroponic, and aeroponic techniques. - Student is able to understand, explain, and apply aquaponic cultivation techniques. - Student is able to understand, explain, and apply fertigation techniques. - Student is able to understand, explain, and apply bonsai and potted fruit cultivation techniques.
Content	1. Terrarium 2. Microgreens 3. Aeroponics 4. Hydroponics 5. Verticulture (Vertical Farming) 6. Aquaponics 7. Bonsai Techniques 8. Fertigation Systems 9. Potted Fruit Plant Cultivation
Examination forms	Quiz, individual assignment, group assignment, discussion
Study and examination requirements	To successfully pass the module, students must attend at least 80% of the classes, complete all assignments and exams, and obtain a final grade of at least 45% (minimum passing grade: D).
Reading list	1. Goyal, M. R. (2016). <i>Water and Fertigation Management in Micro Irrigation</i>. Apple Academic Press Inc., Oakville, Canada. 2. Singh, D. J. (2019). <i>Bonsai: Introduction to Miniature Shrub and Tree Gardening for Beginners</i>. JD-Biz Publishing. 3. Kristiani, A. (2008). <i>Membuat Terarium: Dari Hobi Menjadi Bisnis</i>. Agromedia Pustaka, Jakarta, Indonesia. 4. Packer, B. (2013). <i>Aquaponics System: A Practical Guide to Building and Maintaining Your Own Backyard Aquaponics</i>. Mike Sanders Publishing, New York, USA. 5. Gilo, M. T. (2017). <i>Vertikultur: Bertanam Sayuran di Lahan Terbatas</i>. PT Agromedia Pustaka, Jakarta, Indonesia. 6. Moesa, Z. (2016). <i>Hidroponik Kreatif: Membangun Instalasi Unik Menggunakan Barang Bekas</i>. Agromedia Pustaka, Jakarta, Indonesia. 7. Hendra, H. A. (2014). <i>Bertanam Sayuran Hidroponik</i>. Agromedia Pustaka, Jakarta, Indonesia. 8. Purwanto, and Anas, D. S. (2014). <i>Teknik Hortikultura</i>. IPB Press, Bogor, Indonesia.