Module designation	*Fertilizer and FertilizationTechniques*
Semester(s) in which the module is taught	*6th*
Person responsible for the module	*Prof. Dr. Ir. Dermiyati, M.Agr.Sc. IPU*
Language	*Indonesian language*
Relation to curriculum	*Elective*
Teaching methods	*Lectures (100 minutes)* *Practicum sessions (170 minutes)*
Workload (incl. contact hours, self-study hours)	*Contact hours : 14 weeks x 100 minutes* *Structured learning: 14 weeks x 120 minutes* *Independent study: 14 weeks x 120 minutes* *Practicum sessions: 14 weeks x 170 minutes*
Credit points	*3 (2-1) CP or 4.76 (ECTS)* *((14 weeks x 100 minutes) + (14 weeks x 120 minutes) +* *(14 weeks x 120 minutes) + (14 weeks x 170 minutes)) :* *60 minutes/hour* *= 119 hours : 25 study hours/ECTS* *= 4.76 (ECTS)*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	- *Students are able to aply the basic concepts and principles of cultivation technology and the development of sustainable agriculture technology* - *students are able to identify, formulate, solve problems, and apply plant science, plant protection, soil science, socio-economic agriculture, and plant production engineering principles that are oriented towards good agricultural practices (GAP);* - *students are able to plan, design, implement, and develop plant production with the latest and environmentally friendly technology in creatively and innovatively*
Content	*Definition and scope of fertilizer and fertilization, history of fertilization, fertilizer classification, system and characteristics of natural and artificial fertilizers, basic consideration of fertilization, fertilization management, fertilizer in the soil, calculation of fertilizer use, economics of nutrient utilization plants, fertilizer recommendations*
Examination forms	*oral presentation, essay*

Study and examination requirements	*Participants are evaluated based on their performance in class (lectures) (70%) and lab (practicum) (30%).* *Performance in theory (100%):* *Mid Exam (20%)* *Final Exam (20%)* *Assignments (40%)* *Class participation (10%)* *Individual quiz (10%)* *Performance in practicum (100%):* *Practicum exam (30%)* *Pre-test or post-test (10%)* *Experiment reports (60%)*
Reading list	1. *M. Yuvaraj, V. Arunkumar. 2021. Hand Book of Nutrient Management & Fertilizer .* 2. *Bockman, O. C., Kaarstad, O., Lie, O. H., & Richards, I. 2015. Agriculture and fertilizers. Scientific Publishers.* 3. *FAO. 2019. The International Code of Conduct for the Sustainable Use and Management of Fertilizers. Rome. 56 pp.* 4. *Simanungkalit, R.D.M., Suriadikarta, D.A, Saraswati, R., Setyorini, D., dan Hartatik, W. (Eds). 2006. Pupuk Organik dan Pupuk Hayati. Balai Besar Litbang Sumberdaya Lahan Pertanian Badan Penelitian dan Pengembangan Pertanian. Bogor. 14 hal.* 5. *Taisa, R, Purba, T, Sakiah, Herawati, J , Junaedi, A.S, Hasibuan H.S., Junairiah, Firgiyanto, R. 2021. Ilmu Kesuburan Tanah dan Pemupukan. Yayasan Kita Menulis. 126 hal.*