Module designation	*Basic Chemistry for Agriculture*
Semester(s) in which the module is taught	*1st*
Person responsible for the module	*Prof. Dr. Dwi Hapsoro, M.Sc.*
Language	*Indonesian language*
Relation to curriculum	*Compulsory*
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 apply the basic concepts and principles of cultivation technology and the development of sustainable agriculture technology*
Content	*Basic Chemistry course is a 3 (2-1) credit course. This course presents an understanding of international units, molecules/objects, changes in molecules/objects; properties of atoms/elements in a periodic system, chemical bonds, compounds, and the structure of atoms/elements in molecules/objects; reaction equation equilibrium, solubility, and precipitation reactions; reaction kinetics (speed reactions, catalysts) and molecular movement, laws of thermodynamics; system chemistry of water, acids, bases, salts and buffer solutions; Electrical chemistry (oxidation-reduction); Basic organic chemistry (chain long-chain carbons and functional groups of organic compounds); nitrogen compounds, and lipids.*
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. *Chang, Raymond. 2010. Chemistry. 10th ed. McGraw-Hill Companies, Inc., 1221 Avenue of the Americas, New York, NY 10020. 1170p.* 2. *Chang, Raymond. 2010. Chemistry. Student Solution Manual. 10th ed. McGraw-Hill Companies, Inc., 1221 Avenue of the Americas, New York, NY 10020. 698p.* 3. *Petrucci, R.H., F. G. Herring, J.D. Madura, and C. Bissonnette. 2011. General Chemistry: Principles and Modern Applications. Pearson Canada Inc., Toronto, Ontario. 1427p.* 4. *Brown, T.L., H. E. LeMay, B.E. Bursten, C.J. Murphy, Patrick M. Woodward, Matthew W. Stoltzfus. 2018. Chemistry The Central Science. 14th Ed. Pearson Education Limited. Harlow CM17 9NA United Kingdom. 1252p.* 5. *Topping, J.J. K.J. Denniston, and R.E Caret. 2006. General, Organic, and Biochemistry. Mc Graw Hill Education New York, USA. 87*