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| Module designation | *Plant Nutrient* |
| Module level, if applicable | *Bachelor* |
| Code, if applicable | *PNT20193118* |
| Subtitle, if applicable |  |
| Courses, if applicable | 1. *The definition of nutrient*
2. *Soil as medium*
3. *Nutrient absorption*
4. *Macro nutrient*
5. *Micro nutrient*
6. *Useful elements*
7. *Toxic elements*
8. *The role of microbe*
9. *Rooting systems*
10. *Nutrient study*
11. *The study of plant nutrient content*
12. *Nutrient management*
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| Semester(s) in which the module is taught | *Even* |
| Person responsible for the module | *Nasih Widya Yuwono, S.P., M.P.* |
| Lecturer | *Nasih Widya Yuwono, S.P., M.P.**Cahyo Wulandari, S.P., M.P., D.Agr.* |
| Language | *Bahasa/Indonesia Language.* |
| Relation to curriculum | *Compulsory* |
| Type of teaching, contact hours | *Lecture, practical, and presentation.* |
| Workload | *2/1 SKS or 3,02/1,51 ECTS* |
| Credit points |  |
| Requirements according to the examination regulations | *Presence must be 70% of all meetings.**Has to accomplished all the assignments.* |
| Recommended prerequisites | *-* |
| Module objectives/intended learning outcomes | *Students can explain the principle of plant affinity**Students can analyze plant disturbances**Students can make research designs on plant health**Students can provide nutrient management advice on agricultural land* |
| Content | 1. *The definition of nutrient*
2. *Soil as medium*
3. *Nutrient absorption*
4. *Macro nutrient*
5. *Micro nutrient*
6. *Useful elements*
7. *Toxic elements*
8. *The role of microbe*
9. *Rooting systems*
10. *Nutrient study*
11. *The study of plant nutrient content*
12. *Nutrient management*
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| Study and examination requirements and forms of examination | *Assesment Presentasi/UTS/UAS* |
| Media employed | *Text, Presentation, Visual & Audio Web.* |
| Reading list | 1. *Alloway, BJ, 2013. Heavy Metals in Soil. Traace Metals Metalloids in Soil and Their Bioavailability, Springer*
2. *Barker, AV & DJ. Pilbeam. 2006. Handbook of plant nutrition. CRC Press*
3. *BassiriRAD, h. 2005. Nutrient Acquisition by Plant. Springer*
4. *Chapman, H.D. 1966. Diagnostic Criteria for Plants and Soils, University of California Press.*
5. *Epstein, E & AJ, Bloom. 2005. Mineral Nutrition of Plant : Principles and Persectives. 2ed. Sinauer Associates.*
6. *Esher, A & T. Beeckman. 2013. Plant Roots in Crops Production. CRC Press.*
7. *Fageria, NK. 2012. The Role of Plant Roots in Crops Production. CRC Press*
8. *Hewirr, E.J. 1966. Sand ans Water Culture Methods Used in the Study of Plant Nutritions. 2ed. Commonwealyth Agricultural Bureaux.*
9. *Iskandar, IK. & MB. Kirkham, 2001. Trace Elements in Soil: Bioavailailability, Flux, and Transfer. CRC Press.*
10. *Jones, JB, B. Wolf & HA. Mills. 1991. Plant Analysis Handbook: A practical sampling, preparation, analysis and interpretation guide. Micro –macro publishing.*
11. *Jones, JB. 2012. Plant nutrition and soil fertility manual. 2ed. CRC Press.*
12. *Marschner, H, & P. Marschner. 2012. Marschner mineral nutrition of higher plants 3ed. Academic Press.*
13. *Mengel, K, EA. Kirkby, H. Kosegarten & T. Appel. 2001. Prinsinples of Plant Nutrition. 5 ed. Springer.*
14. *Mortvedt, JJ. 1991. Micronutritients in Agriculture, 2ed. Soil Science Society of America.*
15. *Pinton, R. , Z. Varanini , & P. Nannipieri. 2007. The Rhizosphere: Biochemistry and Organic Substances at the Soil-Plant Interface. CRC Press.*
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