**UNIVERSITI TEKNOLOGI MARA**

**AGR638: PRECISION AGRICULTURE**

| | |
|---|---|
| **Course Name (English)** | PRECISION AGRICULTURE APPROVED |
| **Course Code** | AGR638 |
| **MQF Credit** | 3 |
| **Course Description** | A course designed for students who desire to understand the acquisition and analysis of geographically referenced data for the management of crop production systems. Topics include: mapping, map projections, implementation of global positioning systems, data formats, geographic information systems, grid sampling, soil fertility and physical properties, yield monitoring, variable-rate application, crop modelling and economics. |
| **Transferable Skills** | Knowledge, Communication, leadership, teamwork, life long learning |
| **Teaching Methodologies** | Lectures, Web Based Learning, Problem Based Learning (PBL) |
| **CLO** | CLO1 Explain the concepts and principles of precision agriculture<br>CLO2 Relate and describe on the spatial and temporal data<br>CLO3 Construct and recommend precision agriculture management plans to increase profitability, and reduce economic and environmental risks associated with agricultural production. |
| **Pre-Requisite Courses** | No course recommendations |

| **Topics** |
|---|
| **1. 1. What is precision agriculture?**<br>1.1) Basic concepts and definitions |
| **2. 2. Precision Agriculture – Tools and processes**<br>2.1) 2.1 Sensing technology (crop and soil)<br>2.2) 2.2 GPS – The Global Positioning System<br>2.3) 2.3 GIS – Geographic Information System<br>2.4) 2.4 VRT- Variable rate technology<br>2.5) 2.5 Yield Monitoring and Mapping |
| **3. 3. Remote Sensing Images**<br>3.1) 3.1 Remote sensing platform<br>3.2) 3.2 Spectral response of vegetation and soil<br>3.3) 3.3 Image Analysis and Interpretation |
| **4. 4. Data analysis**<br>4.1) Basic statistic in Precision Farming |
| **5. 5. Management Zone**<br>5.1) 5.1 Management Zone and technology<br>5.2) 5.2 Management Zone and Grid Sampling<br>5.3) 5.3 Management Zone and Field Variability<br>5.4) 5.4 spatial and temporal variables<br>5.5) 5.5 Developing Management Zone |
| **6. 6. Application in Agriculture**<br>6.1) Variable Rate Technology |
| **7. 7. Economic of Precision Agriculture**<br>7.1) Economic review in Precision Agriculture |

| Assessment Breakdown | % |
|---|---|
| Continuous Assessment | 60.00% |
| Final Assessment | 40.00% |

**Details of Continuous Assessment**

| Assessment Type | Assessment Description | % of Total Mark | CLO |
|---|---|---|---|
| Assignment | Written Lab Report | 15% | CLO2 |
| Presentation | n/a | 15% | CLO3 |
| Test | Chapter 1-3 | 30% | CLO1 |

**Reading List**

**Recommended Text**

- **Brase T. 2005, *Precision Agriculture*, Delmar Cangage Learning New York**

**Article/Paper List**

This Course does not have any article/paper resources

**Other References**

- **n/a Gorr, W.L and Kurland, A.S. 2008, *GIS Tutorial: Workbook for ArcView 9.*, Esri Press, 3rd ed.**
- **n/a Pierce, F. J. 2007, *GIS Applications in Agriculture (GIS Applications in Agriculture Series).* , CRC Press**
- **n/a Srinivasan, A. 2006, *Handbook of Precision Agriculture: Principles And Applications.* , CRC Press.**
- **n/a Washington D.C National Research Council 1997, *Precision Agriculture in the 21st Century: Geospatial and Information Technologies in Crop Management.* , National Academies Press.**