UNIVERSITI TEKNOLOGI MARA

AGA602: SEED TECHNOLOGY

Course Name (English)	SEED TECHNOLOGY APPROVED
Course Code	AGA602
MQF Credit	3
Course Description	This course covers different subjects related to seed technology including importance of seeds, development of seed, principle of seed production, cultural practices, rouging and isolation processes such as harvesting, handling and storing. In addition, this course addresses factors affecting seed quality and covers methods of seed production for most important horticultural and field crops grown in Malaysia.
Transferable Skills	Able to indentify a good quality seed, maintain and provide good quality seed to the public
Teaching Methodologies	Lectures, Blended Learning, Practical Classes
CLO	CLO1 Understand the concepts and basic information in seed technology CLO2 Carry out the proper methods in seed testing, breakdown of seed dormancy, seed storage and handling and production of artificial seed. CLO3 Develop the ability for the application of the acquired knowledge to improve agriculture and access information to solve specific seed production problems.
Pre-Requisite Courses	No course recommendations

Topics
1. 1.0 Seed quality 1.1) 1.1. concepts of seed technology 1.2) 1.2 The importance of seed in agriculture 1.3) 1.3 seed morphology 1.4) 1.4 definition of seed 1.5) 1.5 Types of seed and structure 1.6) 1.6 major families of dicotyledon and monocotyledon 1.7) 1.7 development of male and female gametophyte 1.8) 1.8 Pollination 1.9) 1.9 Fertilization 1.10) 1.10 Development of fruit and seed 1.11) 1.11 Seed germination
2. 2.0 Seed physiology 2.1) 2.1 Physiology of seed 2.2) 2.2 Seed dormancy 2.3) 2.3 Respiration 2.4) 2.4 Seed growth 2.5) 2.5 Abnormalities of seedling and their causes
3. 3.0 Seed production 3.1) 3.1 Seed production technology 3.2) 3.2 development of varieties and hybrids 3.3) 3.3 Propagation of seed 3.4) 3.4 micropropagation of seed
4. 4.0 Seed conservation 4.1) 4.1 Artificial seed technology 4.2) 4.2 Seed preservation 4.3) 4.3 Cryopreservation 4.4) 4.4 Genebank

5. 5.0 Postharvest technology of seed 5.1) 5.1 Postharvest handling 5.2) 5.2 Packaging and marketing 5.3) 5.3 Primary, secondary and tertiary product processing
6. 6.0 seed storage 6.1) 6.1 Seed periodicity 6.2) 6.2 Orthodox seeds 6.3) 6.3 Sub-orthodox seeds 6.4) 6.4 Temperate-recalcitrant seeds 6.5) 6.5 Recalcitrant seed
7. 7.0 Seed health 7.1) 7.1 Common pests and disease of seed 7.2) 7.2 Methods to control pests and disease of seed
8. 8.0 Seed quality 8.1) 8.1 Seed testing 8.2) 8.1.1 seed lot 8.3) 8.1.2 purity test 8.4) 8.1.3 seed weight 8.5) 8.1.4 Seed moisture content 8.6) 8.7) 8.2 Germination test 8.8) 8.2.1 laboratory germination counts 8.9) 8.2.2 TTZ test 8.10) 8.2.3 Germination energy 8.11) 8.12) 8.3 Seed treatment 8.13) 8.3.1 Boiling water treatment 8.14) 8.3.2 hot water treatment 8.15) 8.3.3 Cold water treatment 8.16) 8.3.4 Scarification 8.17) 8.3.5 Acid scarification 8.18) 8.3.6 stratification 8.19) 8.20) 8.4 Seed grading
9. 9.0 Current issues and prospects in seed technology 9.1) 9.1 Seed priming 9.2) 9.2 Seed aging

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Case Study	- Student will be given a video/situation. - Student must extract, justify, and conclude the element of seed technology from materials given.	20%	CLO1
Lab Exercise	- Students need to attend a practical lab and conduct an experiment in the laboratory	20%	CLO2
Test	online test	20%	CLO1

Reading List

Reference Book Resources

- **Debbie Rees, Graham Farrell, John Orchard 2012, *Crop Post-Harvest: Science and Technology, Perishables. John Wiley and Sons*, John Wiley and Sons**
- **Muhammad Siddique. 2012, *Tropical and Subtropical Fruits:Postharvest Physiology, Processing and Packaging*., John Wiley & Sons**
- **Sharma, S.K. and Nautiyal, M.C. 2009, *Postharvest Technology of Horticultural Crop.*, New India Publishing**
- **Wojciech, J. F., Stanley, E.P., Robert, L.S.,and Bernhard, B. 2009, *Post Harvest Handling: A System Approach.*, Academic Press.**

Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources