



UNIVERSITI TEKNOLOGI MARA

FSG571: ETHICAL AND LEGAL ISSUES IN SCIENCE AND BIOTECHNOLOGY

Course Name (English)	ETHICAL AND LEGAL ISSUES IN SCIENCE AND BIOTECHNOLOGY APPROVED
Course Code	FSG571
MQF Credit	2
Course Description	This course include moral and ethical issues of biotechnology, advantages and disadvantages of using biotechnology, legal issues pertaining to biotechnology, issues of concern in biotechnology and scope of work of a plant biotechnologist. Students are taught on a self learning basis using a combination of distance learning, self study, group interactions and tutorials. Students are encouraged to examined, evaluate and debate the various aspects of biotechnology through group discussions, case study analysis and mock debate. Students are also exposed to the moral dimension of entrepreneurship, e.g. responsible and sustainable entrepreneurship.
Transferable Skills	Express opinion/ view critically and scientifically Team work
Teaching Methodologies	Case Study, Small Group Sessions , Role Play, Problem-based Learning
CLO	<p>CLO1 Demonstrate values and attitude skills in moral and ethical issues that arises due to the use of science and biotechnology</p> <p>CLO2 Demonstrate ethics and professionalism skills related to the use of specific scientific and biotechnology applications and their impact to the receiving communities</p> <p>CLO3 Demonstrate entrepreneurial skills in identifying risks of modern science/ biotechnology applications, and local regulations in place for governance of responsible entrepreneurship</p> <p>CLO4 Demonstrate entrepreneurial skills in ethical issues regarding ownership of scientific or biotechnological resources, patents and sustainable entrepreneurship with reference to local socioeconomics</p> <p>CLO5 Integrate social communication skills in regard to on scientific issues of major public concern e.g. GMO as food etc. from the point-of-view of commercial entities and the public consumer</p>
Pre-Requisite Courses	No course recommendations
Topics	
1. Ethical Issues in Science and Biotechnology 1.1) 1.1 Moral Concerns 1.2) 1.2 Ethical Concerns 1.3) 1.3 Necessity of Moral and Ethical Concerns in Science 1.4) 1.4 Evaluation of Moral and Ethical Concerns	
2. Ethical and social impacts of science and biotechnology 2.1) 2.1 Animal cloning 2.2) 2.2 Embryonic stem cell research 2.3) 2.3 Genetically modified organisms as food 2.4) 2.4 Gene therapy 2.5) 2.5 Designer babies 2.6) 2.6 Data privacy 2.7) 2.7 (Other current issues in science, as appropriate)	

3. Regulation of science and biotechnology dealings and activities 3.1) 3.1 The Cartagena Protocol 3.2) 3.2 The Biosafety Act 2007 3.3) 3.3 Regulations and responsibilities 3.4) 3.4 Application and Notifications 3.5) 3.5 Liability and redress 3.6) 3.6 Responsible entrepreneurship
4. Commercialisation and ownership of science and biotechnology products and services 4.1) 4.1 Patenting and Intellectual Property 4.2) 4.2 Access and Benefit Sharing 4.3) 4.3 Ownership of technology 4.4) 4.4 Sustainable entrepreneurship
5. Group discussion on a selected current topic/ scenario in science and technology 5.1) N/A
6. Mock Public consultation/ presentation/ community engagement on a selected current topic/ scenario in science and technology with impact on the local community 6.1) N/A

Assessment Breakdown		%		
Continuous Assessment		100.00%		
Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Case Study	Module 1 and 2 for CLO 2	15%	CLO2
	Case Study	Modul 1 and 2 for CLO 1	15%	CLO1
	Case Study	Module 3 and 4	30%	CLO3
	Discussion	Module 5	10%	CLO4
	Seminar	Module 6	30%	CLO5
Reading List	Recommended Text	<ul style="list-style-type: none"> • Nigel G. Halford 2012, <i>Genetically modified crops</i>, 2nd Ed., London: Imperial College Press [ISBN: 1848168381] • Gary L. Comstock 2010, <i>Life Science Ethics</i>, Springer Publisher eBook 		
	Reference Book Resources	<ul style="list-style-type: none"> • Bygrave, L. A. 2014, <i>Data privacy law: an international perspective</i>, 1st Ed., Oxford University Press • Friedman, Y. 2014, <i>Building biotechnology: business, regulations, patents, laws, politics and science.</i>, Logos Press • Littoz-Monnet, A. 2015, <i>Ethics Experts as an Instrument of Technocratic Governance: Evidence from EU Medical Biotechnology Policy</i>, Wiley Blackwell • Vaidhyathan, S. 2017, <i>Intellectual Property: A Very Short Introduction</i>, 2nd Ed., Oxford University Press • Watson, R. R, and Preedy, V. 2015, <i>Genetically modified organisms in food: Production, Safety, Regulation and Public Health</i>, 1st Ed., Academic Press Publisher 		
Article/Paper List	This Course does not have any article/paper resources			
Other References	This Course does not have any other resources			