

1.	Name of Course/Module	Basic Medical Microbiology
2.	Course Code	HMM1019
3.	Status of Subject	Core for B. Sc Bioinformatics
4.	MQF Level/Stage	Bachelor Degree – MQF Level 6
5.	Version (state the date of the last Senate approval)	June 2012
6.	Requirement for Registration	NONE
7.	Name(s) of academic/teaching staff	Ong Chia Sui Margaret Seldon Leila Hilout
8.	Semester and Year offered	Trimester 1 (Beta level)
9.	Objective of the course/module in the programme :	
	<p>1. To provide basic knowledge on the basic properties of pathogenic microbes including their cellular and molecular structure, microbial replication and growth</p> <p>2. To introduce the principles underlying the detection and identification of microorganisms</p> <p>3. To introduce the principles underlying the mechanisms of infectious diseases</p>	
10.	Learning Outcomes :	
	<p>At the completion of the subject, students should be able to:</p> <p>LO1: Grasp and state the fundamental knowledge on the structure, metabolism, life cycle and taxonomy of microorganisms. (Cognitive, Level 2)</p> <p>LO2: Comprehend the principles of microbial growth control and bacterial genetics. (Cognitive, Level 2)</p> <p>LO3: Describe the mechanism of infectious diseases and host response. (Cognitive, Level 2)</p> <p>LO4: Perform preliminary identification of bacteria through light microscopy and basic laboratory tests. (Psychomotor, Level 3)</p>	
11.	Synopsis:	
	<p>The course provides an introduction on the basis of classification of microorganisms and the microbial biology of major groups of organisms. The concepts of pathogenesis and virulence as they relate to pathogenic bacteria, viruses and fungi, and the host-parasite relationship are presented. Laboratory exercises are used to illustrate morphological characteristics of bacteria and to provide students with practical experience in the handling and identification of bacteria.</p>	
	<p>Kursus ini memberi pengenalan tentang asas pengelasan mikro organisma dan mikro biologi bagi kumpulan organisma yang utama. Konsep tentang patogenesis dan “virulence” yang berkaitan dengan bakteria, virus dan fungi patogenik dan hubungan perumah-parasit akan diajar. Latihan makmal bertujuan memberi gambaran tentang kriteria morfologi bakteria dan memberi peluang kepada pelajar dalam menangani dan mengenal pasti bakteria.</p>	
12.	Mapping of Subject to Programme Outcomes :	

Programme Outcomes		% of Contribution	
PO1: Apply soft skills in work and career related activities		20	
PO2: Demonstrate knowledge and understanding of fundamental concepts, principles and best practices		80	
13.	Assessment Methods and Types :		
	Method and Type	Description/Details	Percentage
	Lab		10%
	Test/Quiz		30%
	Assignment	Report & Presentation	10%
	Final Exam		50%
14.	Details of Subject		
	Topics	Mode of Delivery	
		Lecture	Tutorial
	1. Introduction: The microbial world and you	1	-
	2. Observing microorganisms through a microscope	1	-
	3. Prokaryotic cell structure and morphology <ul style="list-style-type: none"> Structures external to the cell wall Cell wall Structures internal to the cell wall 	2	1
	4. Microbial metabolism <ul style="list-style-type: none"> Catabolic and anabolic reactions Enzymes Energy production Carbohydrate catabolism 	2	-
	5. Growth and death of microorganisms <ul style="list-style-type: none"> Requirement for microbial growth Culture media Obtaining pure culture Preserving bacterial cultures The growth of bacterial cultures Control of microbial growth <ul style="list-style-type: none"> The rate of microbial death Actions of microbial control agents Physical methods of microbial control Chemical methods of microbial control 	2 2	1

	<p>6. Bacterial genetics</p> <ul style="list-style-type: none"> • The prokaryotic chromosome • Mutation • Genetic recombination and transformation • Transduction • Plasmid mediated conjugation • Genetics of drug resistance • Insertion sequence 	2	-
	<p>7. Classification of microorganism</p> <ul style="list-style-type: none"> • The study of phylogenetic relationship of the 3 domains- Bacteria, Archaea and Eukarya • Classification of organisms • Methods of classifying and identifying microorganisms 	2	-
	<p>8. The Prokaryotes-domain Bacteria and Archaea</p> <ul style="list-style-type: none"> • Features of selected prokaryotes 	3	1
	<p>9. The Eukaryotes – Fungi and Algae</p> <ul style="list-style-type: none"> • Characteristics of fungi • Fungal diseases • Characteristics of algae • Roles of algae in nature 	2	-
	<p>10. Viruses, Viroids and Prions</p> <ul style="list-style-type: none"> • General characteristics • Structure • Growth and reproduction • Virus infection 	2	-
	<p>11. Microbe and infectious diseases</p> <ul style="list-style-type: none"> • Systemic diseases 	3	1
	<p>12. Host parasite relationship</p> <ul style="list-style-type: none"> • Innate immunity 	1	-
	<p>13. Bacteria pathogenicity</p>	1	-
	Total	26	4
15.	<p>Laboratory</p> <p>Lab 1 Microscopy</p> <ul style="list-style-type: none"> • Use and care of the microscope • Examination of living organism • Types of microscopes 		

	Lab 2 Staining Methods <ul style="list-style-type: none"> • Preparation of smears and simple staining • Negative staining • Gram staining 	
	Lab 3 Cultivation of Bacteria <ul style="list-style-type: none"> • Microbes in the environment • Transfer of bacteria: Aseptic techniques • Isolation of bacteria by dilution techniques • Special media for isolating bacteria 	
	Lab 4 Microbial Metabolism <ul style="list-style-type: none"> • Carbohydrate catabolism • Fermentation of carbohydrates 	
	Lab 5 Microbial Metabolism <ul style="list-style-type: none"> • Protein catabolism 	
	Lab 6 Microbial Metabolism <ul style="list-style-type: none"> • Respiration Rapid identification methods	
	Lab 7 Microbial Growth <ul style="list-style-type: none"> • Oxygen and growth of bacteria • Role of temperature 	
	Lab 8 Control of Microbial Growth <ul style="list-style-type: none"> • Physical method of control: Heat • Physical method of control: UV radiation • Chemical method of control: Disinfectant and antiseptic • Chemical method of control: Antimicrobial drug 	
16.	Total Student Learning Time (SLT)	Face to Face (Hour)
	Lecture	26
	Tutorials	4
	Laboratory/Practical	24
	Presentation	-
	Assignment	-
	Mid Term Test	1
	Final Exam	2
	Quiz	3 times
	Sub Total	57
	Total SLT	$137/40 = 3.4 \Rightarrow 3$
17.	Credit Value	3
18.	Reading Materials :	

	Textbook	Reference Materials
	1. <i>Microbiology: an introduction: Nine Edition</i> , Tortora, Funke and Case, Eight Edition. Pearson, Benjamin Cummings. 2007	2. <i>Microbiology with diseases by taxonomy. 2nd edition</i> R.W. Bauman 2007
19.	Appendix (to be compiled when submitting the complete syllabus for the programme) : <ol style="list-style-type: none"> 1. Mission and Vision of the University and Faculty 2. Mapping of Programme Objectives to Vision and Mission of Faculty and University 3. Mapping of Programme Outcome to Programme Objectives 4. Programme Objective and Outcomes (Measurement and Descriptions) 	