

**COURSE CHECKLIST COHORT 2020/2021****PROGRAMME: BACHELOR OF SCIENCE IN BIOTECHNOLOGY WITH HONOURS****Sains Asas (13 Kredit) / Fundamental Sciences (13 Credits)**

Code	Course Name	Credit	Status
			√
BTC3000	Kimia Biofizikal / <i>Biophysical Chemistry</i>	3(2+1)	
BCH3003	Kimia Biologi / <i>Biological Chemistry</i>	3(2+1)	
BMY3001	Mikrobiologi / <i>Microbiology</i>	4(4+0)	
BGY3701	Biostatistik / <i>Biostatistics</i>	3(2+1)	

**Teras: Sains Teras dan Gunaan (57 Kredit) / Core Sciences and Applied (57 Credits)**

Code	Course Name	Credit	Status
			√
BTC3001	Pengenalan kepada Bioteknologi / <i>Introduction to Biotechnology</i>	2(2+0)	
BTC3002	Komersialisasi dan Isu Semasa Bioteknologi / <i>Commercialisation and Current Issues in Biotechnology</i>	2(2+0)	
BTC3101	Teknologi Enzim / <i>Enzyme Technology</i>	4(3+1)	
BTC3201	Teknologi Fermentasi / <i>Fermentation Technology</i>	4(3+1)	
BTC3301	Kejuruteraan Bioproses / <i>Bioprocess Engineering</i>	4(4+0)	
BTC3302	Biopemisahan dan Penulenan / <i>Bioseparation and Purification</i>	4(3+1)	
BTC3305	Rekabentuk Bioproses dan Biopenghasilan / <i>Bioprocessing and Biomanufacturing Design</i>	3(2+1)	
BTC3402	Pengurusan dan Penggunaan Sisa / <i>Waste Management and Utilisation</i>	3(2+1)	
BTC4001	Biokeselamatan dan Bioetika / <i>Biosafety and Bioethics</i>	2(2+0)	
BTC4305	Pemodelan dan Pengoptimuman Bioproses / <i>Bioprocess Modelling and Optimization</i>	3(2+1)	
BTC4904	Khidmat Pembelajaran dalam Bioteknologi / <i>Service Learning in Biotechnology</i>	1(0+1)	
BCH3001	Biokimia Komprehensif I / <i>Comprehensive Biochemistry I</i>	3(3+0)	
BCH3002	Biokimia Komprehensif II / <i>Comprehensive Biochemistry II</i>	4(3+1)	
BSM3104	Prinsip Kultur Sel dan Tisu / <i>Principles of Cell and Tissue Culture</i>	3(2+1)	
BSM3201	Biologi Molekul / <i>Molecular Biology</i>	3(3+0)	
BSM3202	Kejuruteraan Genetik / <i>Genetic Engineering</i>	4(3+1)	
BSM4301	Bioinformatik / <i>Bioinformatics</i>	3(2+1)	
BMY3201	Teknik Asas Mikrobiologi / <i>Basic Microbiology Techniques</i>	2(0+2)	
MGM3180	Asas Keusahawanan / <i>Basic Entrepreneurship</i>	3(2+1)	

### Elektif Pengkhususan (Minimum 20 kredit) / *Specialization Elective (20 Credits)*

Kursus elektif pengkhususan (20 kredit) merangkumi pelbagai kursus elektif bidang bioteknologi seperti bioteknologi industri, bioteknologi alam sekitar, bioteknologi haiwan dan tumbuhan, dan bioteknologi makanan. / *(Specialization elective courses ( 20 credits ) includes a variety of elective courses in biotechnology such as industrial biotechnology , environmental biotechnology , animal and plant biotechnology , and food biotechnology)*

Selain kursus **Elektif Bioteknologi**, pelajar boleh memilih kursus elektif keusahawanan bioteknologi: / *students also can choose elective courses in biotechnology entrepreneurship :*

**Elektif Keusahawanan Bioteknologi** - pelajar yang mengambil elektif ini perlu mengambil kursus elektif berjumlah 20 jam kredit yang terdiri daripada elektif bioteknologi (8 kredit) dan elektif keusahawanan bioteknologi (12 kredit). / *Elective Biotechnology Entrepreneurship – students whose taking this elective must take elective courses in total 20 credit hours of electives in biotechnology ( 8 credits ) and elective entrepreneurial biotechnology ( 12 credits )*

Pilih minimum 20 kredit; atau 8 kredit bagi pelajar elektif keusahawanan bioteknologi / <i>Chose minimum 20 credits; or 8 credits for student whose take Elective Biotechnology Entrepreneurship</i>			
Code	Course Name	Credit	Status
			√
BTC3003	Instrumentasi dalam Penyelidikan Bioteknologi / <i>Instrumentation in Biotechnology Research</i>	3(2+1)	
BTC3004	Penulisan Saintifik dalam Bioteknologi / <i>Scientific Writing in Biotechnology</i>	3(3+0)	
BTC3306	Sistem Bioreaktor / <i>Bioreactor System</i>	3(3+0)	
BTC4002	Bioteknologi dalam Bioekonomi / <i>Biotechnology in Bioeconomy</i>	2(2+0)	
BTC4102	Teknologi Enzim Lanjutan / <i>Advanced Enzyme Technology</i>	4(3+1)	
BTC4104	Bioteknologi Makanan / <i>Food Biotechnology</i>	3(2+1)	
BTC4105	Bioteknologi Makanan Lanjutan / <i>Advanced Food Biotechnology</i>	2(2+0)	
BTC4205	Mikrobiologi Industri / <i>Industrial Microbiology</i>	3(2+1)	
BTC4406	Bioremediasi / <i>Bioremediation</i>	3(3+0)	
BTC4408	Teknologi Rawatan Air Sisa / <i>Wastewater Treatment Technology</i>	3(2+1)	
BTC4407	Teknologi Rawatan Sisa Pepejal / <i>Solid Waste Treatment Technology</i>	3(2+1)	
BSM3101	Biologi Sel dan Perkembangan / <i>Cellular and Developmental Biology</i>	3(3+0)	
BSM3501	Kultur Sel dan Tisu Tumbuhan / <i>Plant Cell and Tissue Culture</i>	3(2+1)	
BSM3203	Teknik Penyelidikan dalam Biologi Molekul / <i>Research Techniques in Molecular Biology</i>	3(2+1)	
BSM4201	Genetik Molekul Gunaan / <i>Applied Molecular Genetics</i>	4(3+1)	
BSM4501	Kultur Sel dan Tisu Tumbuhan Gunaan / <i>Applied Plant Cell and Tissue Culture</i>	4(3+1)	
BSM4502	Biologi Sel dan Molekul Tumbuhan Gunaan / <i>Applied Plant Molecular and Cell Biology</i>	4(3+1)	
BSM4503	Biologi Molekul Perkembangan Tumbuhan / <i>Molecular Biology of Plant Development</i>	4(4+0)	

BSM4601	Kejuruteraan Protein / <i>Protein Engineering</i>	4(3+1)	
BSM4701	Bahan Nano dan Bioteknologi / <i>Nanomaterials and Biotechnology</i>	3(3+0)	
BMY4305	Ekologi Mikrob / <i>Microbial Ecology</i>	3(3+0)	
ii) Elektif Keusahawanan Bioteknologi (12 kredit) / <i>Elective in Biotechnology Entrepreneurship (12 Credits)</i>			
BTC3501	Konsep Biokeusahawanan / <i>Bioentrepreneurship Concept</i>	3(2+1)	
BTC3502	Perancangan Biokeusahawanan / <i>Bioentrepreneurship Planning</i>	3(2+1)	
BTC4502	Pengurusan Biokeusahawanan / <i>Bioentrepreneurship Management</i>	3(1+2)	
BTC4503	Perniagaan Bioteknologi / <i>Biotechnology Business</i>	3(1+2)	

**Projek Penyelidikan Tahun Akhir (7 Kredit) / *Final Year Project (7 Credits)***

Code	Course Name	Credit	Status
			√
BTC4959	Disertasi Bachelo / <i>Bachelor Dissertation</i>	6(0+6)	
BTC4991	Seminar / <i>Seminar</i>	1(0+1)	

**Latihan Industri (6 Kredit) / *Industrial Training (6 Credit)***

Code	Course Name	Credit	Status
			√
BTC4901	Latihan Industri / <i>Industrial Training</i>	6(0+6)	

**Kemahiran Generik, Kemanusiaan dan Sastera Liberal (23 Kredit) / *Generic Skills Humanities and Liberal Arts Courses (23 Credits)***

Code	Course Name	Credit	Status
			√
LPE2301	Interaksi dan Pembentangan Akademik / <i>Academic Interaction and Presentation</i>	3(2+1)	
LPE2501	Penulisan Akademik / <i>Academic Writing</i>	3(2+1)	
SKP2101	Kenegaraan Malaysia / <i>Malaysian Nationhood</i>	3(3+0)	
*FEM2401	*Politik Malaysia dan Masyarakat / <i>Malaysian Politics and Society</i>	*2(2+0)	
SKP3112	Falsafah dan Isu Semasa/ <i>Philosophy and Current Issues</i>	2(2+0)	
*SKP3113 or	* Falsafah dan Isu Semasa Masyarakat Sivil / <i>Philosophy and Current Issues in Civil Society</i>		
*SKP3123	atau *Penghayatan Etika dan Peradaban di Malaysia / <i>Internalization of Ethics and Civilization in Malaysia</i>	3(3+0)	

SKP3122	Penghayatan Etika dan Peradaban/ Internalization of Ethics and Civilization	2(2+0)	
*LPM2100	Bahasa Melayu Komunikasi/ Malay Language Communication		
PRT2009	Pertanian dan Kehidupan / <i>Agriculture and Life</i>	2(1+1)	
XXX1234	Kokurikulum / Co-curriculum	1(0+1)	
YYY1234	Kokurikulum / Co-curriculum	1(0+1)	
KOM3403	Pengucapan Awam / Public Oration	3(3+0)	
AAA1234	Kursus Bahasa Global / <i>Global Language</i>	3(3+0)	