



**UPM**  
UNIVERSITI PUTRA MALAYSIA  
BERILMU BERBAKTI

PEJABAT PENTADBIRAN  
AKADEMIK DAN ANTARABANGSA  
PEJABAT TIBALAN NAIB CANSOLOR (AKADEMIK DAN ANTARABANGSA)  
OFFICE OF ACADEMIC ADMINISTRATION AND INTERNATIONAL  
OFFICE OF DEPUTY VICE CHANCELLOR (ACADEMIC AND INTERNATIONAL)  
مُجَابَت قَنْدَبِيرَان آكَادَمِيك دَان اِنْتَارَابَعْسَا  
مُجَابَت تَبَالَان نَابِيسَ جَنْسَلُور (آكَادَمِيك دَان اِنْتَارَابَعْسَا)

# BUKU PANDUAN PROGRAM PENGAJIAN PRASISWAZAH

*UNDERGRADUATE STUDY PROGRAMME HAND BOOK*

**SESI AKADEMIK**  
ACADEMIC SESSION

**2024/2025**

**FAKULTI SAINS KOMPUTER  
DAN TEKNOLOGI MAKLUMAT**

*FACULTY OF COMPUTER SCIENCE AND  
INFORMATION TECHNOLOGY*

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## **FAKULTI SAINS KOMPUTER DAN TEKNOLOGI MAKLUMAT | FACULTY OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY**

### **Maklumat Am**

Fakulti Sains Komputer dan Teknologi Maklumat telah ditubuhkan pada 1 Oktober 1998 hasil daripada pengembangan tawaran program akademik dan telah dinaikkan taraf daripada Jabatan Sains Komputer yang dahulunya di bawah Fakulti Sains dan Pengajian Alam Sekitar.

Fakulti ini telah memperolehi Sistem Pengurusan Kualiti MS ISO 9001:2000 dalam bidang akademik pada tahun 2007 yang lalu. Ini bermakna pelajar berpeluang belajar di fakulti yang sentiasa komited dengan peningkatan tahap akademik dari semasa ke semasa.

Fakulti Sains Komputer dan Teknologi Maklumat mempunyai dua matlamat yang jelas iaitu, melahirkan graduan yang berkualiti, berdaya saing dan berupaya untuk terus maju melalui pembelajaran yang berterusan. Matlamat kedua fakulti adalah menjadi fakulti yang terunggul dalam penyelidikan.

Sehingga kini terdapat empat jabatan di bawah fakulti iaitu Jabatan Sains Komputer, Jabatan Kejuruteraan Perisian dan Sistem Maklumat, Jabatan Multimedia dan Jabatan Teknologi Komunikasi dan Rangkaian yang memantapkan dan melicinkan lagi proses pembelajaran pelajar di fakulti.

### **General Information**

The Faculty of Computer Science and Information Technology was established on October 1, 1998 due to the expansion in academic programs offered. The faculty came into being when the Department of Computer Science from the Faculty of Science and Environmental Studies was upgraded to faculty level.

This faculty obtained the Quality Management System MS ISO 9001:2000 certification in the academic field in 2007. Students thus have the opportunity to study at a faculty which is committed to constantly improve its academic standards.

The Faculty of Computer Science and Information Technology has two clear goals. The first is to produce quality graduates who are competitive and able to excel through continuous learning. The faculty's second goal is to be a leading research faculty.

Currently there are four departments under the faculty namely, the Department of Computer Science, Department of Software Engineering and Information System, Department of Multimedia and Department of Communication and Networking Technology, that serve to enhance and facilitate the students' learning process.

## **PENGURUSAN FAKULTI | FACULTY MANAGEMENT**

### **Dekan / Dean**

Prof. Dato' Dr. Shamala K. Subramaniam

### **Timbalan Dekan (Akademik, Hal Ehwal Pelajar dan Alumni) / Deputy Dean (Academic, Student Affairs and Alumni)**

Prof. Madya Dr. Hazura binti Zulzalil

### **Timbalan Dekan (Siswazah dan Antarabangsa) / Deputy Dean (Postgraduate and International)**

Prof. Madya Ts. Dr. Abdullah Muhammed

### **Timbalan Dekan (Penyelidikan, Inovasi dan Jaringan Industri dan Masyarakat) / Deputy Dean (Research, Innovation and Industry and Community Relations)**

Prof. Madya Ts. Dr. Iskandar Ishak

### **Ketua Jabatan Sains Komputer / Head Department of Computer Science**

Prof. Madya Dr. Thinagaran Perumal

### **Ketua Jabatan Kejuruteraan Perisian dan Sistem Maklumat / Head Department of Software Engineering and Information System**

Prof. Madya Ts. Dr. Novia Indriaty Admodisastro

### **Ketua Jabatan Multimedia / Head Department of Multimedia**

Prof. Madya Dr. Puteri Suhaiza binti Sulaiman

### **Ketua Jabatan Teknologi Komunikasi dan Rangkaian / Head Department of Communication Technology and Network**

Prof. Madya Dr. Zurina binti Mohd. Hanapi

### **Ketua Penolong Pendaftar / Head Assistant Registrar**

Encik Wan Zaharuddin bin Wan Abdullah @ Wan Abd Rahman

### **Penolong Pendaftar Kanan (Akademik) / Senior Assistant Registrar (Academic)**

Puan Maizatul Afzan binti Tajul Ariffin

### **Penolong Pendaftar (Siswazah dan Antarabangsa) / Assistant Registrar (Postgraduate and International)**

Encik Mohd Komarul Arifin Mohd Ali

**PROGRAM PRASISWAZAH YANG DITAWARKAN |  
UNDERGRADUATE PROGRAMME OFFERED**

**Bachelor | Bachelor**

- 1. Bacelor Sains Komputer dengan Kepujian**  
*Bachelor in Computer Science with Honours*
- 2. Bacelor Sains Komputer (Pengkomputeran Multimedia) dengan Kepujian**  
*Bachelor of Computer Science (Multimedia Computing ) with Honours*
- 3. Bacelor Sains Komputer (Rangkaian Komputer) dengan Kepujian**  
*Bachelor of Computer Science (Computer Network) with Honours*
- 4. Bacelor Kejuruteraan Perisian dengan Kepujian**  
*Bachelor of Software Engineering with Honours*

**MAKLUMAT DAN SKEMA PENGAJIAN PAKEJ ELEX UNTUK PROGRAM 4 TAHUN |  
INFORMATION AND STUDY SCHEME ELEX PACKAGE FOR 4 YEAR PROGRAM**

(Berkuatkuasa untuk Ambilan Oktober 2022 dan Seterusnya / Effective for October 2022 Intake Onwards)

**ELEX Requirements for Graduation**

The required number of LPE courses, CEL courses and LAX points to be fulfilled is based on MUET Bands as shown in the table below:

| CEFR        | MUET                 |                    | IELTS      | TOEFL iBT  | CIEP        | Pearson Test of English (PTE) Academic | Cambridge English | Keperluan Bergraduat   Graduation Requirement  |
|-------------|----------------------|--------------------|------------|------------|-------------|--|-------------------|--|
| Tahap Level | Band (Previous ver.) | Band (Latest ver.) | Skor Score | Skor Score | Tahap Level | Skor Score                             | Skor Score        |  |
| C1 – C2     | 5 - 6                | 5.0 - 5+           | 7.0 - 9.0  | 95 - 120   | N/A         | 76 - 90                                | 180 - 230         | 2 LPE + 1 CEL + 24 mata/point LAX<br>atau / or<br>1 LPE + 1 CEL + 24 mata/point LAX<br>+ 1 Bahasa Global/Global Language |
| B1 – B2     | 3 - 4                | 3.0 - 4.5          | 4.0 - 6.5  | 42 - 94    | 104 - 109   | 43 - 75                                | 140 - 179         | 2 LPE + 2 CEL + 24 mata/point LAX  |
| A1 – A2     | 1 - 2                | 1.0 - 2.5          | 2.5 - 3.5  | N/A        | 101 - 103   | 24 - 42                                | 100 - 139         | 3 LPE + 3 CEL + 24 mata/point LAX  |

| SKEMA UNTUK PROGRAM 4 TAHUN   SCHEME FOR 4-YEAR PROGRAMMES |                                |           |                               |           |   |           |
|--|--------------------------------|-----------|-------------------------------|-----------|---|-----------|
| SEM  | MUET 1.0 – 2.5                 |           | MUET 3.0 – 4.5                |           | MUET 5.0 – 5+                                   |           |
|  | TOEFL iBT                      | N/A       | TOEFL iBT                     | 42 – 94   | TOEFL iBT                                       | 95 – 120  |
|  | IELTS                          | 3.0 – 3.5 | IELTS                         | 4.0 – 6.5 | IELTS   | 7.0 – 9.0 |
|  | CIEP                           | 101 – 103 | CIEP                          | 104 – 109 | CIEP  | N/A       |
|  | PTE                            | 30 – 42   | PTE                           | 43 – 75   | PTE   | 76 – 90   |
|  | CE                             | 120 – 139 | CE                            | 140 – 179 | CE  | 180 – 230 |
| <b>1</b>   | LAX 12 points                  |           | LAX 6 points                  |           | LAX 6 points                                    |           |
| <b>2</b>   | 6 LAX points                   | CEL2102   | LPE2403                       |           | Choose ONE: CEL2103/2104                        |           |
| <b>3</b>   | LPE2302                        |           | LPE2503                       |           | Choose ONE: LPE2303 / LPE5402 / Global Language |           |
| <b>4</b>   | LPE2403                        |           | LAX 6 points                  |           | LAX 6 points                                    |           |
| <b>5</b>   | LPE2503                        |           | Choose ONE: CEL2105/2106/2107 |           | Choose ONE: LPE2504 / LPE2303 / Global Language |           |
| <b>6</b>   | Choose ONE: CEL2105/ 2106/2107 |           | Choose ONE: CEL2105/2106/2107 |           | LAX 6 points                                    |           |
| <b>7</b>   | Choose ONE: CEL2105/ 2106/2107 |           | LAX 6 points                  |           | LAX 6 points                                    |           |
| <b>8</b>   | 6 LAX points                   |           | LAX 6 points                  |           | -   |           |

**Nota/Note:**

- Students must follow the scheme of study provided based on MUET (or equivalent) every semester.
- Students MUET Band 5 and 6 have the option of taking either one or two LPE courses. Students who choose one LPE course, must also take a course in global language.
- Students who are on Industrial Training in a specific semester, do not need to register for English Language course or English Language skills activities for that semester but have to register and attend the course or activity in the preceding or prospective semester (subject to pre-requisite courses).

## INFORMATION FOR ELEx (ENGLISH LANGUAGE EXPERIENCE) PACKAGE

### I. LANGUAGE PROFICIENCY ENGLISH

#### LPE Courses [(2+1) credits]

- (a) LPE2302 (*Reading for Academic Purposes*)
- (b) LPE2403 (*Academic Interaction and Presentation*)
- (c) LPE2503 (*Academic Writing*)
- (d) LPE2303 (*Critical Reading Skills*) - **ONLY** for MUET Band 5 & 6
- (e) LPE2504 (*Creative Writing Skills*) - **ONLY** for MUET Band 5 & 6

**Nota/Note:**

Students who failed the BBI course, must repeat the course until they pass before taking the next course.

### II. CERTIFICATE IN ENGLISH LANGUAGE

#### CEL Courses

- (a) CEL2102 (*Effective Listening and Speaking*)
- (b) CEL2103 (*Writing Academic Texts*)
- (c) CEL2105 (*Spoken Communication for the Workplace*)
- (d) CEL2106 (*Communication for Professional Development*)
- (e) CEL2107 (*Written Business Communication*)

**Nota/Note:**

Students who obtained Level 1 for CEL course, must repeat the course until pass (Level 2 and above).

### III. LANGUAGE ACTIVITIES WITHOUT CREDIT

#### LAX Activity

- (a) LAX (6 points or 12 points); 1 point = 2 hours per week
- (b) 6 points LAX = 6 weeks x 2 hours per week
- (c) 12 points LAX = 12 weeks x 2 hours per week
- (d) LAX activities offered each semester will be announced by CALC (Centre for the Advancement of Language Competence)

**Nota/Note:**

- Students who obtained TM (Not Satisfactory), must take the same or different LAX activities to replace the failed activity points (TM).
- Students must ensure that the required number of LAX points is fulfilled before graduation.

**Nota/Note:**

- Students must follow the prescribed scheme of study based on their MUET results (or equivalent) every semester.
- MUET Band 5 and 6 students can choose to enrol in either one or two BBI courses. If they choose to do one BBI course, they must also enrol in one global language.
- Students who are away on Industrial Training in any semester do have not to enrol in any course or LAX activity for that particular semester. However, they must enrol in a course or LAX activity in the prior or subsequent semester (subject to course pre-requisites).

## **ELEX PACKAGE INFORMATION**

### **I. BBI Courses [(2+1) credits]**

- (a) LPE2302 (*Reading for Academic Purposes*)
- (b) LPE2403 (*Academic Interaction and Presentation*)
- (c) LPE2503 (*Academic Writing*)
  - BBI2425 – for MUET Band 5 & 6 students only
  - BBI2426 – for MUET Band 5 & 6 students only

**Nota/Note:**

*If students fail in a BBI course, they must repeat and pass the course before they can enrol in a subsequent BBI course.*

### **II. CEL Courses**

- (a) CEL2102 (*Effective Listening and Speaking*)
- (b) CEL2103 (*Writing Academic Texts*)
- (c) CEL2105 (*Spoken Communication for the Workplace*)
- (d) CEL2106 (*Communication for Professional Development*)
- (e) CEL2107 (*Written Business Communication*)

**Nota/Note:**

*If students obtain LEVEL 1, they must repeat and pass the course (LEVEL 2 and above).*

### **III. LAX Activity**

- (a) LAX (6 points or 12 points); 1 point = 2 hours per week
- (b) 6-point LAX = 6 weeks x 2 hours per week
- (c) 12-point LAX = 12 weeks x 2 hours per week

**Nota/Note:**

- *If students obtain TM (Tidak Memuaskan/Unsatisfactory), they must enrol in the same or different LAX activity to replace the failed points.*
- *Students must ensure that they fulfil the required number of LAX points for graduation.*

### **IV. Pre-requisites for Courses**

- (a) LPE2302: MUET Band 1 – 2/equivalent
- (b) LPE2403: CEL 2102 Level 2 or MUET Band 3 – 4/equivalent
- (c) LPE2503: Passed LPE2403
- (d) CEL2103: Passed LPE2503 or MUET Band 5 – 6/equivalent
- (e) CEL2102, 2105, 2106, 2107: No pre-requisite required



**KURSUS PENGUKUHAN MATEMATIK - DI LUAR KURIKULUM (untuk Pelajar Tempatan) |  
MATHEMATICS ENHANCEMENT COURSE – EXTRACURRICULAR (for Local Students)**

(Berkuatkuasa untuk Kemasukan Oktober 2024 dan Seterusnya/Effective for October 2024 Intake Onwards)

| <b>KOD KURSUS</b><br><i>COURSE CODE</i> | <b>NAMA KURSUS</b><br><i>COURSE NAME</i>                                  | <b>Kr</b> | <b>K</b> | <b>A</b> | <b>PRASYARAT</b><br><i>PREREQUISITE</i> |
|---|---|-----------|----------|----------|---|
| CCS3002                                 | Prinsip Matematik Tambahan<br><i>Principles of Additional Mathematics</i> | 3         | 3        | 0        | Tiada/None                              |

Pelajar tempatan yang tidak mendapat sekurang-kurangnya Gred C pada peringkat SPM atau yang setara dalam mata pelajaran Matematik Tambahan, calon perlu mengambil dan lulus kursus Prinsip Matematik Tambahan (CCS3002) pada permulaan pengajian. Kursus ini tidak diambil kira dalam syarat keperluan jumlah 126 jam kredit untuk bergraduat.

*Local students who do not obtain at least a Grade C at the SPM level or its equivalent in Additional Mathematics must take and pass the Principles of Additional Mathematics course (CCS3002) at the beginning of their studies. This course will not be counted towards the 126 credit hours required for graduation.*



Bachelor Sains Komputer  
dengan Kepujian  
*Bachelor in Computer Science  
with Honours*

## STRUKTUR KURIKULUM | CURRICULUM STRUCTURE

|  |  |
|--|--|
| <b>Nama Program</b><br><i>Program Name</i>                         | : Bachelor Sains Komputer dengan Kepujian<br><i>Bachelor in Computer Science with Honours</i>  |
| <b>Jumlah Kredit Bergraduat</b><br><i>Total Credit to Graduate</i> | : 126 Jam Kredit/ <i>Credit Hours</i>  |
| <b>Tempoh Pengajian</b><br><i>Length of Study</i>                  | : 8 Semester/ <i>Semesters</i> (4 Tahun/ <i>Years</i> )  |
| <b>Matlamat Program</b><br><i>Program Goals</i>                    | : <ol style="list-style-type: none"> <li>Menghasilkan profesional sains komputer yang berupaya menyediakan penyelesaian pengkomputeran bagi masalah bukan-rutin berdasarkan pengetahuan dan kemahiran teknikal bersesuaian dalam bidang Sains Komputer mengikut keperluan industri.<br/><i>To produce computer science professionals who are able to provide computing solutions for non-routine problems based on appropriate knowledge and technical skills in the field of computer science according to the industry requirements.</i></li> <li>Menghasilkan profesional sains komputer yang berkebolehan memimpin serta mampu berkomunikasi secara efektif.<br/><i>To produce computer science professionals who are able to lead as well as communicate effectively.</i></li> <li>Menghasilkan profesional sains komputer yang mempunyai minda keusahawanan dan komited dalam penerokaan ilmu sepanjang hayat bagi pemajuan kerjaya.<br/><i>To produce computer science professionals who have entrepreneurial mindset and committed in the exploration of lifelong learning for career progression.</i></li> <li>Menghasilkan profesional sains komputer yang mengamalkan sikap beretika dan berintegriti dalam pembangunan diri dan kerjaya.<br/><i>To produce computer science professionals who uphold ethics and integrity in personal and career development.</i></li> </ol> |

## RINGKASAN HASIL PEMBELAJARAN PROGRAM | SUMMARY OF PROGRAM LEARNING OUTCOMES

| PROGRAM  | Hasil Pembelajaran Program   |  |  |   |  |   |  |   |  |  |   |
|--|--|--|--|---|--|---|--|---|--|--|---|
|  | Menganalisis konsep fakta, prinsip dan teori yang berkaitan dengan Sains Komputer. | Membina penyelesaian pengkomputeran menggunakan algoritma dan teknik bersesuaian bagi masalah bukan-rutin. | Mengaplikasi algoritma dan teknik yang sesuai untuk penyelesaian pengkomputeran. | Mempamerkan komunikasi berkesan dengan pelbagai pihak berkepentingan. | Menggunakan interaksi berkesan dengan pelbagai pihak berkepentingan. | Menggunakan kemahiran digital untuk menyelesaikan masalah dalam bidang pengajian. | Menggunakan kemahiran numerasi untuk menyelesaikan masalah dalam bidang pengajian. | Menunjukkan kerja berpasukan, akauntabiliti dan tanggungjawab dalam menyampaikan penyelesaian yang berkaitan dengan bidang pengajian. | Mempamerkan keupayaan untuk melanjutkan pengetahuan yang relevan melalui pembelajaran sepanjang hayat. | Menerapkan minda keusahawanan dalam memberikan penyelesaian. | Menegakkan amalan profesional dan etika dalam persekitaran kerja. |
|  | CPS 3-1  | CPS 3-2  | CPS 3-3  | CPS 3-4   | CPS 3-5  | CPS 3-6   | CPS 3-7  | CPS 3-8   | CPS 3-9  | CPS 3-10   | CPS 3-11  |
|  | PO1  | PO3  | PO2  | PO5   | PO4  | PO7   | PO10   | PO9   | PO7  | PO8  | PO6   |
|  | C  | CTPS   | P  | TS  | CS   | DS  | NS   | LS  | LL   | KK   | EM  |
| <b>Bachelor Sains Komputer dengan Kepujian</b><br><i>Bachelor in Computer Science with Honours</i> | <b>39</b>  | <b>15</b>  | <b>25</b>  | <b>8</b>  | <b>8</b>   | <b>8</b>  | <b>5</b>   | <b>6</b>  | <b>8</b>   | <b>5</b>   | <b>11</b>   |

## 1. KURSUS MPU DAN UNIVERSITI | MPU AND UNIVERSITY COURSES (21 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME   | Kr | K | A | PRASYARAT<br>PREREQUISITE   |
|---------------------------|--|----|---|---|-----------------------------|
| SKP3112*                  | Falsafah dan Isu Semasa<br><i>Philosophy and Current Issues</i>  | 2  | 2 | 0 | Tiada/None                  |
| SKP3113**                 | Falsafah dan Isu Semasa Masyarakat Sipil<br><i>Philosophy and Current Issues in Civil Society</i>            | 3  | 3 | 0 | Tiada/None                  |
| <b>Atau/Or</b>            |  |    |   |   |                             |
| SKP3123**                 | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3  | 3 | 0 | Tiada/None                  |
| SKP3122*                  | Penghayatan Etika dan Peradaban<br><i>Internalization of Ethics and Civilization</i>                         | 2  | 2 | 0 | Tiada/None                  |
| LPM2100**                 | Bahasa Melayu Komunikasi<br><i>Malay Language Communication</i>  | 2  | 2 | 0 | Tiada/None                  |
| SSW3200                   | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>  | 3  | 2 | 1 | Tiada/None                  |
| SKP2101*                  | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>   | 3  | 3 | 0 | Tiada/None                  |
| FEM2401**                 | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                                     | 2  | 2 | 0 | Tiada/None                  |
| FEM2313                   | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>   | 1  | 1 | 0 | Tiada/None                  |
| QKXxxxx                   | Ko-kurikulum<br><i>Co-curriculum</i>   | 1  | 0 | 1 |                             |
| QKXxxxx                   | Ko-kurikulum<br><i>Co-curriculum</i>   | 1  | 0 | 1 |                             |
| LPE2403                   | Interaksi dan Pembentangan Akademik<br><i>Academic Interaction and Presentation</i>                          | 3  | 3 | 0 | LPE2302/MUET Band 3.0 – 4.5 |
| LPE2503                   | Penulisan Akademik<br><i>Academic Writing</i>  | 3  | 3 | 0 | LPE2403                     |
| PRT2009                   | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>   | 2  | 1 | 1 | Tiada/None                  |

### Nota/Note:

1. Kr = Jam Kredit/*Credit Hour*, K = Kuliah/*Lecture*, A = Amali/*Laboratory*, T = Tutorial
2. \*Pelajar Tempatan/*Local Students* \*\*Pelajar Antarabangsa/*International Students*
3. Pelajar diwajibkan memilih **2 kredit** daripada **kursus ko-kurikulum** yang ditawarkan oleh Universiti. *It is compulsory for students to take 2 credits of co-curriculum courses offered by the University.*
4. Pelajar perlu melengkapkan pakej keperluan Bahasa Inggeris seperti jadual di bawah (Butiran lanjut mengenai CEL dan LAX sila rujuk di muka surat 4 buku panduan ini)/*Students need to complete the English package as in the table below (For more details on CEL and LAX please refer to page 4 of this book).*

| CEFR    | MUET                       |                          | IELTS     | TOEFL<br>iBT | CIEP      | Pearson<br>Test of<br>English<br>(PTE)<br>Academic | Cambridge<br>English | Keperluan Bergraduat  <br><i>Graduation Requirement</i>   |
|---------|----------------------------|--------------------------|-----------|--------------|-----------|--|----------------------|---|
|         | Band<br>(Previous<br>ver.) | Band<br>(Latest<br>ver.) |           |              |           |  |                      |   |
| C1 – C2 | 5 - 6                      | 5.0 - 5+                 | 7.0 - 9.0 | 95 - 120     | N/A       | 76 - 90  | 180 - 230            | 2 LPE + 1 CEL + 24<br>mata/point LAX<br><b>atau / or</b><br>1 LPE + 1 CEL + 24<br>mata/point LAX<br>+ 1 Bahasa Global/ <i>Global<br/>Language</i> |
| B1 – B2 | 3 - 4                      | 3.0 - 4.5                | 4.0 - 6.5 | 42 - 94      | 104 - 109 | 43 - 75  | 140 - 179            | 2 LPE + 2 CEL +<br>24 mata/point LAX  |
| A1 – A2 | 1 - 2                      | 1.0 - 2.5                | 2.5 - 3.5 | N/A          | 101 - 103 | 24 - 42  | 100 - 139            | 3 LPE + 3 CEL +<br>24 mata/point LAX  |

## 2. MODUL TERAS KOMPUTERAN | CORE COMPUTING MODULES (18 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME  | Kr | K | A | PRASYARAT<br>PREREQUISITE |
|---------------------------|---|----|---|---|---------------------------|
| CCS3100                   | Penyelesaian Masalah dan Konsep Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i> | 3  | 2 | 1 | Tiada/None                |
| CCS3200                   | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>                | 3  | 3 | 0 | CCS3100                   |
| CCS3300                   | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3  | 3 | 0 | CCS3200                   |
| CCS3400                   | Prinsip Pangkalan Data<br><i>Database Principles</i>  | 3  | 2 | 1 | CCS3101                   |
| CND3200                   | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>                    | 3  | 3 | 0 | Tiada/None                |
| SSW3001                   | Kejuruteraan Perisian<br><i>Software Engineering</i>  | 3  | 3 | 0 | CCS3101                   |

## 3. MODUL TERAS DISIPLIN | CORE DISCIPLINARY MODULES (36 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME  | Kr | K | A | PRASYARAT<br>PREREQUISITE  |
|---------------------------|---|----|---|---|----------------------------|
| CCS3003                   | Struktur Diskret<br><i>Discrete Structures</i>  | 3  | 3 | 0 | Tiada/None                 |
| CCS3101                   | Pengaturcaraan Berorientasikan Objek<br><i>Object-Oriented Programming</i>                | 3  | 2 | 1 | CCS3100                    |
| CCS3104                   | Pengaturcaraan Lanjutan<br><i>Advanced Programming</i>                                    | 3  | 2 | 1 | CCS3101                    |
| CCS3202                   | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>                      | 3  | 3 | 0 | CCS3101                    |
| CCS3402                   | Pembangunan Aplikasi Pangkalan Data<br><i>Database Application Development</i>            | 3  | 2 | 1 | CCS3400                    |
| CCS3600                   | Kecerdasan Buatan<br><i>Artificial Intelligence</i>                                       | 3  | 3 | 0 | CCS3202                    |
| CCS3700                   | Pengaturcaraan Sistem Terbenam<br><i>Embedded Systems Programming</i>                     | 3  | 2 | 1 | CCS3300                    |
| CCS4202                   | Reka Bentuk dan Analisis Algoritma<br><i>Design and Analysis of Algorithms</i>            | 3  | 3 | 0 | CCS3202                    |
| CCS4500                   | Keselamatan Komputer<br><i>Computer Security</i>  | 3  | 3 | 0 | CCS3300                    |
| SSW3307                   | Pengalaman Pengguna dan Antara Muka Pengguna<br><i>User Experience and User Interface</i> | 3  | 3 | 0 | SSW3302 atau/or<br>SSW3001 |
| SSW3401                   | Pembangunan Aplikasi Mudah Alih<br><i>Mobile Application Development</i>                  | 3  | 2 | 1 | CCS3101                    |
| SSW4202                   | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i>                                  | 3  | 3 | 0 | CCS3100                    |

## 4. PROJEK | PROJECT (6 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME                  | Kr | K | A | PRASYARAT<br>PREREQUISITE  |
|---------------------------|---|----|---|---|--|
| CCS4949                   | Projek Bachelior<br><i>Bachelor Project</i> | 6  | 0 | 6 | Dengan Kebenaran<br>Jabatan<br><i>With Department<br/>Permission</i> |

## 5. LATIHAN INDUSTRI | INDUSTRIAL TRAINING (12 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME                     | Kr | K | A  | PRASYARAT<br>PREREQUISITE  |
|---------------------------|--|----|---|----|--|
| CCS4901                   | Latihan Industri<br><i>Industrial Training</i> | 12 | 0 | 12 | Dengan Kebenaran<br>Jabatan<br><i>With Department<br/>Permission</i> |

## 6. ELEKTIF BIDANG | FIELD ELECTIVES (21 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME   | Kr | K | A | PRASYARAT<br>PREREQUISITE  |
|---------------------------|--|----|---|---|----------------------------|
| CCS4200                   | Reka Bentuk Pengkompil<br><i>Compiler Design</i>   | 3  | 3 | 0 | CCS3202                    |
| CCS4300                   | Reka Bentuk Sistem Pengoperasian<br><i>Operating System Design</i>                                       | 3  | 3 | 0 | CCS3300                    |
| CCS4400                   | Sistem Pangkalan Data Lanjutan<br><i>Advanced Database Systems</i>                                       | 3  | 3 | 0 | CCS3400                    |
| CCS4402                   | Pentadbiran Pangkalan Data<br><i>Database Administration</i>   | 3  | 3 | 0 | CCS4400                    |
| CCS4404                   | Analitik Bisnes<br><i>Business Analytics</i>   | 3  | 3 | 0 | CCS3400                    |
| CCS4406                   | Analitik Data Raya<br><i>Big Data Analytics</i>  | 3  | 3 | 0 | CCS3400                    |
| CCS4502                   | Kriptografi<br><i>Cryptography</i>   | 3  | 3 | 0 | CCS3202                    |
| CCS4504                   | Forensik Komputer<br><i>Computer Forensics</i>   | 3  | 3 | 0 | CCS3300                    |
| CCS4506                   | Keselamatan Pangkalan Data<br><i>Database Security</i>   | 3  | 3 | 0 | CCS3402                    |
| CCS4600                   | Perlombongan Data<br><i>Data Mining</i>  | 3  | 3 | 0 | CCS3600                    |
| CCS4602                   | Pembelajaran Mesin<br><i>Machine Learning</i>  | 3  | 3 | 0 | CCS3600                    |
| CCS4604                   | Sistem Berasaskan Pengetahuan<br><i>Knowledge Based System</i>   | 3  | 3 | 0 | CCS3600                    |
| CCS4700                   | Pembangunan Sistem Terbenam<br><i>Embedded Systems Development</i>                                       | 3  | 3 | 0 | CCS3700                    |
| CCS4702                   | Pembangunan Sistem Robotik<br><i>Robotic System Development</i>  | 3  | 3 | 0 | CCS3202                    |
| CCS4704                   | Internet Benda dan Aplikasi<br><i>Internet of Things and Applications</i>                                | 3  | 3 | 0 | CCS3700                    |
| CND4400                   | Sistem Teragih<br><i>Distributed Systems</i>   | 3  | 3 | 0 | CND3200                    |
| CND4503                   | Penilaian Kerentanan dan Pengujian Penembusan<br><i>Vulnerability Assessment and Penetration Testing</i> | 3  | 3 | 0 | CND4500 atau/or<br>CCS4500 |
| CND4504                   | Teknologi Blok Rantai<br><i>Blockchain Technology</i>  | 3  | 3 | 0 | CND4500 atau/or<br>CCS4500 |
| CSM3206                   | Pemprosesan Bahasa Tabii<br><i>Natural Language Processing</i>   | 3  | 2 | 1 | CCS3101                    |
| SSW3201                   | Statistik bagi Sains Komputer<br><i>Statistics for Computer Science</i>                                  | 3  | 3 | 0 | Tiada/ None                |
| SSW3310                   | Pengurusan Projek Perisian<br><i>Software Project Management</i>   | 3  | 3 | 0 | SSW3301 atau/or<br>SSW3001 |
| SSW4357                   | Pembangunan Aplikasi dalam Pengkomputeran Awan<br><i>Application Development in Cloud Computing</i>      | 3  | 3 | 0 | CCS3101 dan/and<br>CNS3200 |

## 7. MODUL BEBAS | FREE MODULES (12 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME   | Kr | K | A | PRASYARAT<br>PREREQUISITE |
|---------------------------|--|----|---|---|---------------------------|
|                           | Pelajar dikehendaki memilih sekurang-kurangnya 12 kredit daripada mana-mana kursus dengan kebenaran Ketua Jabatan.<br><i>Students are required to choose at least 12 credits of any courses with the permission of the Head of Department.</i> | 12 |   |   |                           |

**SKEMA PENGAJIAN/STUDY SCHEME**  
**BACELOR SAINS KOMPUTER DENGAN KEPUJIAN /**  
**BACHELOR IN COMPUTER SCIENCE WITH HONOURS (MUET Band 2.0 – 2.5)**

| TAHUN 1 / 1 <sup>ST</sup> YEAR      |   |                |                                     |   |                |
|-------------------------------------|---|----------------|-------------------------------------|---|----------------|
| SEMESTER 1/1 <sup>ST</sup> SEMESTER |   |                | SEMESTER 2/2 <sup>ND</sup> SEMESTER |   |                |
| KOD/CODE                            | KURSUS/COURSE   | Kr             | KOD/CODE                            | KURSUS/COURSE   | Kr             |
| SKP2101*                            | Kenegaraan Malaysia/<br><i>Malaysian Nationhood</i>   | 3+0            | FEM2313                             | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>                    | 1+0            |
| FEM2401**                           | Politik Malaysia dan Masyarakat/<br><i>Malaysian Politics and Society</i>   | 2+0            |                                     |   |                |
| SKP3112*                            | Falsafah dan Isu Semasa/<br><i>Philosophy and Current Issues</i>  | 2+0            | CCS3101                             | Pengaturcaraan Berorientasikan Objek<br><i>Object-Oriented Programming</i>          | 2+1            |
| SKP3113**                           | Falsafah dan Isu Semasa Masyarakat<br>Sivil/<br><i>Philosophy and Current Issues in Civil<br/>Society</i>           | 3+0            |                                     |   |                |
| atau/or                             | atau/or   | 3+0            |                                     |   |                |
| SKP3123**                           | Penghayatan Etika dan Peradaban di<br>Malaysia<br><i>Internalization of Ethics and Civilization in<br/>Malaysia</i> |                |                                     |   |                |
| SKP3122*                            | Penghayatan Etika dan Peradaban/<br><i>Internalization of Ethics and Civilization</i>                               | 2+0            | CCS3200                             | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>  | 3+0            |
| LPM2100**                           | Bahasa Melayu Komunikasi  | 2+0            |                                     |   |                |
| CCS3003                             | Struktur Diskret<br><i>Discrete Structures</i>  | 3+0            | CND3200                             | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>      | 3+0            |
| CCS3100                             | Penyelesaian Masalah dan Konsep<br>Pengaturcaraan<br><i>Problem Solving and Programming<br/>Concepts</i>            | 2+1            | SSW4202                             | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i>                            | 3+0            |
| PRT2009                             | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>  | 1+1            |                                     |   |                |
| QKxxxxx                             | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>   | 0+1            | QKxxxxx                             | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>   | 0+1            |
| LAX (12 mata/points)                |   |                | CEL2102                             | <i>Effective Listening and Speaking</i>   |                |
|                                     |   |                | LAX (6 mata/points)                 |   |                |
| <b>JUMLAH/ TOTAL</b>                |   | <b>16</b>      | <b>JUMLAH/ TOTAL</b>                |   | <b>14</b>      |
| TAHUN 2/2 <sup>ND</sup> YEAR        |   |                |                                     |   |                |
| SEMESTER 1/1 <sup>ST</sup> SEMESTER |   |                | SEMESTER 2/2 <sup>ND</sup> SEMESTER |   |                |
| KOD/CODE                            | KURSUS/COURSE   | Kr             | KOD/CODE                            | KURSUS/COURSE   | Kr             |
| CCS3104                             | Pengaturcaraan Lanjutan<br><i>Advanced Programming</i>  | 2+1            | CCS3600                             | Kecerdasan Buatan<br><i>Artificial Intelligence</i>                                 | 3+0            |
| CCS3202                             | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>  | 3+0            | CCS3402                             | Pembangunan Aplikasi Pangkalan Data<br><i>Database Application Development</i>      | 2+1            |
| CCS3300                             | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3+0            | CCS3700                             | Pengaturcaraan Sistem Terbenam<br><i>Embedded Systems Programming</i>               | 2+1            |
| CCS3400                             | Prinsip Pangkalan Data<br><i>Database Principles</i>  | 2+1            | CCS4202                             | Reka Bentuk dan Analisis Algoritma<br><i>Design and Analysis of Algorithms</i>      | 3+0            |
| SSW3001                             | Kejuruteraan Perisian<br><i>Software Engineering</i>  | 3+0            | CCS4500                             | Keselamatan Komputer<br><i>Computer Security</i>                                    | 3+0            |
|                                     |   |                | CCSxxxx                             | <b>Elektif Bidang</b><br><b>Field Electives</b>                                     | 3 <sup>^</sup> |
| LPE2302                             | Pembacaan untuk Tujuan Akademik<br><i>Reading for Academic Purposes</i>   | 3+0            | LPE2403                             | Interaksi dan Pembentangan Akademik<br><i>Academic Interaction and Presentation</i> | 3+0            |
| <b>JUMLAH/TOTAL</b>                 |   | <b>18</b>      | <b>JUMLAH/TOTAL</b>                 |   | <b>21</b>      |
| TAHUN 3/3 <sup>RD</sup> YEAR        |   |                |                                     |   |                |
| SEMESTER 1/1 <sup>ST</sup> SEMESTER |   |                | SEMESTER 2/2 <sup>ND</sup> SEMESTER |   |                |
| KOD/CODE                            | KURSUS/COURSE   | Kr             | KOD/CODE                            | KURSUS/COURSE   | Kr             |
| SSW3307                             | Pengalaman Pengguna dan Antara Muka<br>Pengguna<br><i>User Experience and User Interface</i>                        | 3+0            | SSW3200                             | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>                             | 2+1            |
| SSW3401                             | Pembangunan Aplikasi Mudah Alih<br><i>Mobile Application Development</i>  | 2+1            | CCS4949A                            | Projek Bachelo<br><i>Bachelor Project</i>   | 0+2            |
| CCSxxxx                             | <b>Elektif Bidang</b><br><b>Field Electives</b>   | 9 <sup>^</sup> | CCSxxx                              | <b>Elektif Bidang</b><br><b>Field Electives</b>                                     | 6 <sup>^</sup> |
| XXXxxxx                             | <b>Elektif Bebas</b><br><b>Free Electives</b>   | 3#             | XXXxxxx                             | <b>Elektif Bebas</b><br><b>Free Electives</b>                                       | 3#             |
| LPE2503                             | Penulisan Akademik<br><i>Academic Writing</i>   | 3+0            | CEL2106/CEL2107                     |   |                |
| <b>JUMLAH/TOTAL</b>                 |   | <b>21</b>      | <b>JUMLAH/TOTAL</b>                 |   | <b>14</b>      |

| TAHUN 4/4 <sup>TH</sup> YEAR        |  |                |                                     |  |           |
|-------------------------------------|--|----------------|-------------------------------------|--|-----------|
| SEMESTER 1/1 <sup>ST</sup> SEMESTER |  |                | SEMESTER 2/2 <sup>ND</sup> SEMESTER |  |           |
| KODI/CODE                           | KURSUS/COURSE                              | Kr             | KODI/CODE                           | KURSUS/COURSE                                  | Kr        |
| CCS4949B                            | Projek Bachelor<br><i>Bachelor Project</i> | 0+4            | CCS4901                             | Latihan Industri<br><i>Industrial Training</i> | 0+12      |
| CCSxxxx                             | Elektif Bidang<br><i>Field Electives</i>   | 3 <sup>^</sup> |                                     |  |           |
| XXXxxxx                             | Elektif Bebas<br><i>Free Electives</i>     | 6 <sup>#</sup> |                                     |  |           |
| CEL2105                             |  |                |                                     |  |           |
| <b>JUMLAH/TOTAL</b>                 |  | <b>13</b>      | <b>JUMLAH/TOTAL</b>                 |  | <b>12</b> |

**Nota/Note:**

- \*Pelajar tempatan/*Local student*, \*\*Pelajar antarabangsa/*International student*
- <sup>^</sup>Pelajar perlu mengambil 21 kredit kursus Elektif Bidang bagi keperluan bergraduasi/ <sup>^</sup>*Student has to take 21 credits Field Electives courses for graduation requirements.*
- <sup>#</sup>Pelajar perlu mengambil 12 kredit kursus Elektif Bebas bagi keperluan bergraduasi/ <sup>#</sup>*Student has to take 12 credits Free Electives courses for graduation requirements.*
- LPE2302 tidak dikira dalam kredit bergraduasi/*LPE2302 not counted in graduation credits*



**SKEMA PENGAJIAN/STUDY SCHEME**  
**BACELOR SAINS KOMPUTER DENGAN KEPUJIAN /**  
**BACHELOR IN COMPUTER SCIENCE WITH HONOURS (MUET Band 3.0 – 4.5)**

| TAHUN 1 / 1 <sup>ST</sup> YEAR      |   |                |                                     |   |                |
|-------------------------------------|---|----------------|-------------------------------------|---|----------------|
| SEMESTER 1/1 <sup>ST</sup> SEMESTER |   |                | SEMESTER 2/2 <sup>ND</sup> SEMESTER |   |                |
| KOD/CODE                            | KURSUS/COURSE   | Kr             | KOD/CODE                            | KURSUS/COURSE   | Kr             |
| SKP2101*                            | Kenegaraan Malaysia/<br><i>Malaysian Nationhood</i>   | 3+0            | FEM2313                             | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>                    | 1+0            |
| FEM2401**                           | Politik Malaysia dan Masyarakat/<br><i>Malaysian Politics and Society</i>   | 2+0            |                                     |   |                |
| SKP3112*                            | Falsafah dan Isu Semasa/<br><i>Philosophy and Current Issues</i>  | 2+0            | CCS3101                             | Pengaturcaraan Berorientasikan Objek<br><i>Object-Oriented Programming</i>          | 2+1            |
| SKP3113**                           | Falsafah dan Isu Semasa Masyarakat<br>Sivil/<br><i>Philosophy and Current Issues in Civil<br/>Society</i>           | 3+0            |                                     |   |                |
| atau/or                             | atau/or   | 3+0            |                                     |   |                |
| SKP3123**                           | Penghayatan Etika dan Peradaban di<br>Malaysia<br><i>Internalization of Ethics and Civilization in<br/>Malaysia</i> |                |                                     |   |                |
| SKP3122*                            | Penghayatan Etika dan Peradaban/<br><i>Internalization of Ethics and Civilization</i>                               | 2+0            | CCS3200                             | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>  | 3+0            |
| LPM2100**                           | Bahasa Melayu Komunikasi  | 2+0            |                                     |   |                |
| CCS3003                             | Struktur Diskret<br><i>Discrete Structures</i>  | 3+0            | CND3200                             | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>      | 3+0            |
| CCS3100                             | Penyelesaian Masalah dan Konsep<br>Pengaturcaraan<br><i>Problem Solving and Programming<br/>Concepts</i>            | 2+1            | SSW4202                             | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i>                            | 3+0            |
| PRT2009                             | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>  | 1+1            |                                     |   |                |
| QKxxxxx                             | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>   | 0+1            | QKxxxxx                             | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>   | 0+1            |
| LAX (6 mata/points)                 |   |                | LPE2403                             | Interaksi dan Pembentangan Akademik<br><i>Academic Interaction and Presentation</i> | 3+0            |
| <b>JUMLAH/TOTAL</b>                 |   | <b>16</b>      | <b>JUMLAH/TOTAL</b>                 |   | <b>17</b>      |
| TAHUN 2/2 <sup>ND</sup> YEAR        |   |                |                                     |   |                |
| SEMESTER 1/1 <sup>ST</sup> SEMESTER |   |                | SEMESTER 2/2 <sup>ND</sup> SEMESTER |   |                |
| KOD/CODE                            | KURSUS/COURSE   | Kr             | KOD/CODE                            | KURSUS/COURSE   | Kr             |
| CCS3104                             | Pengaturcaraan Lanjutan<br><i>Advanced Programming</i>  | 2+1            | CCS3600                             | Kecerdasan Buatan<br><i>Artificial Intelligence</i>                                 | 3+0            |
| CCS3202                             | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>  | 3+0            | CCS3402                             | Pembangunan Aplikasi Pangkalan Data<br><i>Database Application Development</i>      | 2+1            |
| CCS3300                             | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3+0            | CCS3700                             | Pengaturcaraan Sistem Terbenam<br><i>Embedded Systems Programming</i>               | 2+1            |
| CCS3400                             | Prinsip Pangkalan Data<br><i>Database Principles</i>  | 2+1            | CCS4202                             | Reka Bentuk dan Analisis Algoritma<br><i>Design and Analysis of Algorithms</i>      | 3+0            |
| SSW3001                             | Kejuruteraan Perisian<br><i>Software Engineering</i>  | 3+0            | CCS4500                             | Keselamatan Komputer<br><i>Computer Security</i>                                    | 3+0            |
| LPE2503                             | Penulisan Akademik<br><i>Academic Writing</i>   | 3+0            | CCSxxxx                             | <b>Elektif Bidang</b><br><b>Field Electives</b>                                     | 3 <sup>^</sup> |
|                                     |   |                | LAX (6 mata/points)                 |   |                |
| <b>JUMLAH/TOTAL</b>                 |   | <b>18</b>      | <b>JUMLAH/TOTAL</b>                 |   | <b>18</b>      |
| TAHUN 3/3 <sup>RD</sup> YEAR        |   |                |                                     |   |                |
| SEMESTER 1/1 <sup>ST</sup> SEMESTER |   |                | SEMESTER 2/2 <sup>ND</sup> SEMESTER |   |                |
| KOD/CODE                            | KURSUS/COURSE   | Kr             | KOD/CODE                            | KURSUS/COURSE   | Kr             |
| SSW3307                             | Pengalaman Pengguna dan Antara Muka<br>Pengguna<br><i>User Experience and User Interface</i>                        | 3+0            | SSW3200                             | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>                             | 2+1            |
| SSW3401                             | Pembangunan Aplikasi Mudah Alih<br><i>Mobile Application Development</i>  | 2+1            | CCS4949A                            | Projek Bachelo<br><i>Bachelor Project</i>   | 0+2            |
| CCSxxxx                             | <b>Elektif Bidang</b><br><b>Field Electives</b>   | 9 <sup>^</sup> | CCSxxx                              | <b>Elektif Bidang</b><br><b>Field Electives</b>                                     | 6 <sup>^</sup> |
| XXXxxxx                             | <b>Elektif Bebas</b><br><b>Free Electives</b>   | 3 <sup>#</sup> | XXXxxxx                             | <b>Elektif Bebas</b><br><b>Free Electives</b>                                       | 3 <sup>#</sup> |
| CEL2105                             |   |                | CEL2106/CEL2107                     |   |                |
| <b>JUMLAH/TOTAL</b>                 |   | <b>18</b>      | <b>JUMLAH/TOTAL</b>                 |   | <b>14</b>      |

| TAHUN 4/4 <sup>TH</sup> YEAR        |   |                |                                     |  |           |
|-------------------------------------|---|----------------|-------------------------------------|--|-----------|
| SEMESTER 1/1 <sup>ST</sup> SEMESTER |   |                | SEMESTER 2/2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                            | KURSUS/COURSE                                   | Kr             | KOD/CODE                            | KURSUS/COURSE                                  | Kr        |
| CCS4949B                            | Projek Bachelor<br><i>Bachelor Project</i>      | 0+4            | CCS4901                             | Latihan Industri<br><i>Industrial Training</i> | 0+12      |
| CCSxxxx                             | <b>Elektif Bidang</b><br><b>Field Electives</b> | 3 <sup>^</sup> |                                     |  |           |
| XXXxxxx                             | <b>Elektif Bebas</b><br><b>Free Electives</b>   | 6 <sup>#</sup> |                                     |  |           |
| LAX (12 mata/ <i>points</i> )       |   |                |                                     |  |           |
| <b>JUMLAH/TOTAL</b>                 |   | <b>13</b>      | <b>JUMLAH/TOTAL</b>                 |  | <b>12</b> |

**Nota/Note:**

- \*Pelajar tempatan/*Local student*, \*\*Pelajar antarabangsa/*International student*
- ^Pelajar perlu mengambil 21 kredit kursus Elektif Bidang bagi keperluan bergraduasi/ *^Student has to take 21 credits Field Electives courses for graduation requirements.*
- #Pelajar perlu mengambil 12 kredit kursus Elektif Bebas bagi keperluan bergraduasi/ *# Student has to take 12 credits Free Electives courses for graduation requirements.*

**SKEMA PENGAJIAN/STUDY SCHEME**  
**BACHELOR SAINS KOMPUTER DENGAN KEPUJIAN /**  
**BACHELOR IN COMPUTER SCIENCE WITH HONOURS (MUET Band 5.0 – 5+)**

| TAHUN 1 / 1 <sup>ST</sup> YEAR                  |   |                |                                     |  |                |
|---|---|----------------|-------------------------------------|--|----------------|
| SEMESTER 1/1 <sup>ST</sup> SEMESTER             |   |                | SEMESTER 2/2 <sup>ND</sup> SEMESTER |  |                |
| KOD/CODE  | KURSUS/COURSE   | Kr             | KOD/CODE                            | KURSUS/COURSE  | Kr             |
| SKP2101*  | Kenegaraan Malaysia/<br><i>Malaysian Nationhood</i>   | 3+0            | FEM2313                             | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>                   | 1+0            |
| FEM2401**                                       | Politik Malaysia dan Masyarakat/<br><i>Malaysian Politics and Society</i>   | 2+0            |                                     |  |                |
| SKP3112*  | Falsafah dan Isu Semasa/<br><i>Philosophy and Current Issues</i>  | 2+0            | CCS3101                             | Pengaturcaraan Berorientasikan Objek<br><i>Object-Oriented Programming</i>         | 2+1            |
| SKP3113**                                       | Falsafah dan Isu Semasa Masyarakat<br>Sivil/<br><i>Philosophy and Current Issues in Civil<br/>Society</i>           | 3+0            |                                     |  |                |
| atau/or<br>SKP3123**                            | Penghayatan Etika dan Peradaban di<br>Malaysia<br><i>Internalization of Ethics and Civilization in<br/>Malaysia</i> | 3+0            |                                     |  |                |
| SKP3122*  | Penghayatan Etika dan Peradaban/<br><i>Internalization of Ethics and Civilization</i>                               | 2+0            | CCS3200                             | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i> | 3+0            |
| LPM2100**                                       | Bahasa Melayu Komunikasi  | 2+0            |                                     |  |                |
| CCS3003   | Struktur Diskret<br><i>Discrete Structures</i>  | 3+0            | CND3200                             | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>     | 3+0            |
| CCS3100   | Penyelesaian Masalah dan Konsep<br>Pengaturcaraan<br><i>Problem Solving and Programming<br/>Concepts</i>            | 2+1            | SSW4202                             | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i>                           | 3+0            |
| PRT2009   | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>  | 1+1            |                                     |  |                |
| QKxxxxx   | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>   | 0+1            | QKxxxxx                             | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>  | 0+1            |
| LAX (6 mata/points)                             |   |                | CEL2103/CEL2104                     |  |                |
| <b>JUMLAH/ TOTAL</b>                            |   |                | <b>JUMLAH/ TOTAL</b>                |  |                |
| <b>16</b>                                       |   |                | <b>14</b>                           |  |                |
| TAHUN 2/2 <sup>ND</sup> YEAR                    |   |                |                                     |  |                |
| SEMESTER 1/1 <sup>ST</sup> SEMESTER             |   |                | SEMESTER 2/2 <sup>ND</sup> SEMESTER |  |                |
| KOD/CODE  | KURSUS/COURSE   | Kr             | KOD/CODE                            | KURSUS/COURSE  | Kr             |
| CCS3104   | Pengaturcaraan Lanjutan<br><i>Advanced Programming</i>  | 2+1            | CCS3600                             | Kecerdasan Buatan<br><i>Artificial Intelligence</i>                                | 3+0            |
| CCS3202   | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>  | 3+0            | CCS3402                             | Pembangunan Aplikasi Pangkalan Data<br><i>Database Application Development</i>     | 2+1            |
| CCS3300   | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3+0            | CCS3700                             | Pengaturcaraan Sistem Terbenam<br><i>Embedded Systems Programming</i>              | 2+1            |
| CCS3400   | Prinsip Pangkalan Data<br><i>Database Principles</i>  | 2+1            | CCS4202                             | Reka Bentuk dan Analisis Algoritma<br><i>Design and Analysis of Algorithms</i>     | 3+0            |
| SSW3001   | Kejuruteraan Perisian<br><i>Software Engineering</i>  | 3+0            | CCS4500                             | Keselamatan Komputer<br><i>Computer Security</i>                                   | 3+0            |
| LPE2504   | Kemahiran Penulisan Kreatif<br><i>Creative Writing Skills</i>   | 3+0            | CCSxxxx                             | <b>Elektif Bidang</b><br><b>Field Electives</b>                                    | 3 <sup>^</sup> |
|   |   |                | LAX (6 mata/points)                 |  |                |
| <b>JUMLAH/ TOTAL</b>                            |   |                | <b>JUMLAH/ TOTAL</b>                |  |                |
| <b>18</b>                                       |   |                | <b>18</b>                           |  |                |
| TAHUN 3/3 <sup>RD</sup> YEAR                    |   |                |                                     |  |                |
| SEMESTER 1/1 <sup>ST</sup> SEMESTER             |   |                | SEMESTER 2/2 <sup>ND</sup> SEMESTER |  |                |
| KOD/CODE  | KURSUS/COURSE   | Kr             | KOD/CODE                            | KURSUS/COURSE  | Kr             |
| SSW3307   | Pengalaman Pengguna dan Antara Muka<br>Pengguna<br><i>User Experience and User Interface</i>                        | 3+0            | SSW3200                             | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>                            | 2+1            |
| SSW3401   | Pembangunan Aplikasi Mudah Alih<br><i>Mobile Application Development</i>  | 2+1            | CCS4949A                            | Projek Bachelo<br><i>Bachelor Project</i>  | 0+2            |
| CCSxxxx   | <b>Elektif Bidang</b><br><b>Field Electives</b>   | 9 <sup>^</sup> | CCSxxx                              | <b>Elektif Bidang</b><br><b>Field Electives</b>                                    | 6 <sup>^</sup> |
| XXXxxxx   | <b>Elektif Bebas</b><br><b>Free Electives</b>   | 3 <sup>#</sup> | XXXxxxx                             | <b>Elektif Bebas</b><br><b>Free Electives</b>                                      | 3 <sup>#</sup> |
| LPE2303 / Bahasa Global/ <i>Global Language</i> |   | 3+0            | LAX (6 mata/points)                 |  |                |
| <b>JUMLAH/ TOTAL</b>                            |   |                | <b>JUMLAH/ TOTAL</b>                |  |                |
| <b>21</b>                                       |   |                | <b>14</b>                           |  |                |

| TAHUN 4/4 <sup>TH</sup> YEAR        |   |                |                                     |  |           |
|-------------------------------------|---|----------------|-------------------------------------|--|-----------|
| SEMESTER 1/1 <sup>ST</sup> SEMESTER |   |                | SEMESTER 2/2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                            | KURSUS/COURSE                                   | Kr             | KOD/CODE                            | KURSUS/COURSE                                  | Kr        |
| CCS4949B                            | Projek Bachelor<br><i>Bachelor Project</i>      | 0+4            | CCS4901                             | Latihan Industri<br><i>Industrial Training</i> | 0+12      |
| CCSxxxx                             | <b>Elektif Bidang</b><br><b>Field Electives</b> | 3 <sup>^</sup> |                                     |  |           |
| XXXxxxx                             | <b>Elektif Bebas</b><br><b>Free Electives</b>   | 6 <sup>#</sup> |                                     |  |           |
| LAX (6 mata/ <i>points</i> )        |   |                |                                     |  |           |
| <b>JUMLAH/TOTAL</b>                 |   | <b>13</b>      | <b>JUMLAH/TOTAL</b>                 |  | <b>12</b> |

**Nota/Note:**

- \*Pelajar tempatan/*Local student*, \*\*Pelajar antarabangsa/*International student*
- ^Pelajar perlu mengambil 21 kredit kursus Elektif Bidang bagi keperluan bergraduatu/ *^Student has to take 21 credits Field Electives courses for graduation requirements.*
- #Pelajar perlu mengambil 12 kredit kursus Elektif Bebas bagi keperluan bergraduatu/ *# Student has to take 12 credits Free Electives courses for graduation requirements.*



Bachelor Sains Komputer  
(Pengkomputeran Multimedia)  
dengan Kepujian  
*Bachelor of Computer Science  
(Multimedia Computing)  
with Honours*

## STRUKTUR KURIKULUM | CURRICULUM STRUCTURE

|  |  |
|--|--|
| <b>Nama Program</b><br><i>Program Name</i>                         | : Bacelor Sains Komputer (Pengkomputeran Multimedia) dengan<br>Kepujian<br><i>Bachelor of Computer Science (Multimedia Computing) with Honours</i>   |
| <b>Jumlah Kredit Bergraduat</b><br><i>Total Credit to Graduate</i> | : 126 Jam Kredit/ <i>Credit Hours</i>  |
| <b>Tempoh Pengajian</b><br><i>Length of Study</i>                  | : 8 Semester/ <i>Semesters</i> (4 Tahun/ <i>Years</i> )  |
| <b>Matlamat Program</b><br><i>Program Goals</i>                    | : 1. Menghasilkan profesional sains komputer yang berupaya menyediakan penyelesaian pengkomputeran bagi masalah bukan-rutin berdasarkan pengetahuan dan kemahiran teknikal bersesuaian dalam pengkhususan pengkomputeran multimedia mengikut keperluan industri.<br><i>To produce computer science professionals who are able to provide computing solutions for non-routine problems based on appropriate knowledge and technical skills in the field of multimedia computing according to the industry requirements.</i><br><br>2. Menghasilkan profesional sains komputer yang berkebolehan memimpin serta mampu berkomunikasi secara efektif.<br><i>To produce computer science professionals who are able to lead as well as communicate effectively.</i><br><br>3. Menghasilkan profesional sains komputer yang mempunyai minda keusahawanan dan komited dalam penerokaan ilmu sepanjang hayat bagi pemajuan kerjaya.<br><i>To produce computer science professionals who have an entrepreneurial mindset and committed in the exploration of lifelong learning for career progression.</i><br><br>4. Menghasilkan profesional sains komputer yang mengamalkan sikap beretika dan berintegriti dalam pembangunan diri dan kerjaya.<br><i>To produce computer science professionals who uphold ethics and integrity in personal and career development.</i> |

## RINGKASAN HASIL PEMBELAJARAN PROGRAM | SUMMARY OF PROGRAM LEARNING OUTCOMES

| PROGRAM  | Hasil Pembelajaran Program                                       |  |  |  |   |   |  |   |  |  |   |
|--|--|--|--|--|---|---|--|---|--|--|---|
|  | Menganalisis konsep, prinsip dan teori berkaitan Sains Komputer. | Mengaplikasi algoritma dan teknik yang sesuai untuk penyelesaian pengkomputeran. | Membina penyelesaian pengkomputeran menggunakan algoritma dan teknik bersesuaian bagi masalah bukan-rutin. | Menunjukkan interaksi berkesan dengan pelbagai pihak berkepentingan. | Mempamerkan komunikasi berkesan dengan pelbagai pihak berkepentingan. | Menggunakan kemahiran digital untuk menyelesaikan masalah dalam bidang pengajian. | Menggunakan kemahiran numerasi untuk menyelesaikan masalah dalam bidang pengajian. | Menunjukkan kerja berpasukan, akauntabiliti dan tanggungjawab dalam menyampaikan penyelesaian yang berkaitan dengan bidang pengajian. | Mempamerkan keupayaan untuk melanjutkan pengetahuan yang relevan melalui pembelajaran sepanjang hayat. | Menerapkan minda keusahawanan dalam memberikan penyelesaian. | Menegakkan amalan profesional dan etika dalam persekitaran kerja. |
|  | CPS 3-1  | CPS 3-2  | CPS 3-3  | CPS 3-4  | CPS 3-5   | CPS 3-6   | CPS 3-7  | CPS 3-8   | CPS 3-9  | CPS 3-10   | CPS 3-11  |
|  | PO1  | PO3  | PO2  | PO5  | PO4   | PO7   | PO10   | PO9   | PO8  | PO8  | PO6   |
|  | C  | CTPS   | P  | TS   | CS  | DS  | NS   | LS  | LL   | KK   | EM  |
| <b>Bacelor Sains Komputer (Pengkomputeran Multimedia) dengan Kepujian</b><br><i>Bachelor of Computer Science (Multimedia Computing) with Honours</i> | <b>39</b>  | <b>17</b>  | <b>26</b>  | <b>6</b>   | <b>10</b>   | <b>9</b>  | <b>7</b>   | <b>5</b>  | <b>10</b>  | <b>5</b>   | <b>10</b>   |

## 1. KURSUS MPU DAN UNIVERSITI | MPU AND UNIVERSITY COURSES (21 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME   | Kr | K | A | PRASYARAT<br>PREREQUISITE      |
|---------------------------|--|----|---|---|--------------------------------|
| SKP3112*                  | Falsafah dan Isu Semasa<br><i>Philosophy and Current Issues</i>  | 2  | 2 | 0 | Tiada/None                     |
| SKP3113**                 | Falsafah dan Isu Semasa Masyarakat Sipil<br><i>Philosophy and Current Issues in Civil Society</i>            | 3  | 3 | 0 | Tiada/None                     |
| Atau/Or                   | Atau/Or  |    |   |   |                                |
| SKP3123**                 | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3  | 3 | 0 | Tiada/None                     |
| SKP3122*                  | Penghayatan Etika dan Peradaban<br><i>Internalization of Ethics and Civilization</i>                         | 2  | 2 | 0 | Tiada/None                     |
| LPM2100**                 | Bahasa Melayu Komunikasi<br><i>Malay Language Communication</i>  | 2  | 2 | 0 | Tiada/None                     |
| SSW3200                   | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>  | 3  | 2 | 1 | Tiada/None                     |
| SKP2101*                  | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>   | 3  | 3 | 0 | Tiada/None                     |
| FEM2401**                 | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                                     | 2  | 2 | 0 |                                |
| FEM2313                   | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>   | 1  | 1 | 0 | Tiada/None                     |
| QKXxxxx                   | Ko-kurikulum<br><i>Co-curriculum</i>   | 1  | 0 | 1 |                                |
| QKXxxxx                   | Ko-kurikulum<br><i>Co-curriculum</i>   | 1  | 0 | 1 |                                |
| LPE2403                   | Interaksi dan Pembentangan Akademik<br><i>Academic Interaction and Presentation</i>                          | 3  | 3 | 0 | LPE2302/MUET<br>Band 3.0 – 4.5 |
| LPE2503                   | Penulisan Akademik<br><i>Academic Writing</i>  | 3  | 3 | 0 | LPE2403                        |
| PRT2009                   | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>   | 2  | 1 | 1 | Tiada/None                     |

### Nota/Note:

- Kr = Jam Kredit/*Credit Hour*, K = Kuliah/*Lecture*, A = Amali/*Laboratory*, T = Tutorial
- \*Pelajar Tempatan/*Local Students* \*\*Pelajar Antarabangsa/*International Students*
- Pelajar diwajibkan memilih **2 kredit** daripada **kursus ko-kurikulum** yang ditawarkan oleh Universiti.  
*It is compulsory for students to take 2 credits of co-curriculum courses offered by the University.*
- Pelajar perlu melengkapkan pakej keperluan Bahasa Inggeris seperti jadual di bawah (Butiran lanjut mengenai CEL dan LAX sila rujuk di muka surat 4 buku panduan ini).  
*Students need to complete the English package as in the table below (For more details on CEL and LAX please refer to page 4 of this book).*

| CEFR           | MUET                       |                          | IELTS         | TOEFL<br>iBT  | CIEP           | Pearson<br>Test of<br>English<br>(PTE)<br>Academic | Cambridge<br>English | Keperluan Bergraduat  <br>Graduation Requirement   |
|----------------|----------------------------|--------------------------|---------------|---------------|----------------|--|----------------------|--|
| Tahap<br>Level | Band<br>(Previous<br>ver.) | Band<br>(Latest<br>ver.) | Skor<br>Score | Skor<br>Score | Tahap<br>Level | Skor<br>Score                                      | Skor<br>Score        |  |
| C1 – C2        | 5 - 6                      | 5.0 - 5+                 | 7.0 - 9.0     | 95 - 120      | N/A            | 76 - 90  | 180 - 230            | 2 LPE + 1 CEL + 24<br>mata/point LAX<br><b>atau / or</b><br>1 LPE + 1 CEL + 24<br>mata/point LAX<br>+ 1 Bahasa Global/Global<br>Language |
| B1 – B2        | 3 - 4                      | 3.0 - 4.5                | 4.0 - 6.5     | 42 - 94       | 104 - 109      | 43 - 75  | 140 - 179            | 2 LPE + 2 CEL +<br>24 mata/point LAX   |
| A1 – A2        | 1 - 2                      | 1.0 - 2.5                | 2.5 - 3.5     | N/A           | 101 - 103      | 24 - 42  | 100 - 139            | 3 LPE + 3 CEL +<br>24 mata/point LAX   |

## 2. MODUL TERAS KOMPUTERAN | CORE COMPUTING MODULES (18 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME  | Kr | K | A | PRASYARAT<br>PREREQUISITE |
|---------------------------|---|----|---|---|---------------------------|
| CCS3100                   | Penyelesaian Masalah dan Konsep Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i> | 3  | 2 | 1 | Tiada/None                |
| CCS3200                   | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>                | 3  | 3 | 0 | CCS3100                   |
| CCS3300                   | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3  | 3 | 0 | CCS3200                   |
| CCS3400                   | Prinsip Pangkalan Data<br><i>Database Principles</i>  | 3  | 2 | 1 | CCS3101                   |
| CND3200                   | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>                    | 3  | 3 | 0 | Tiada/None                |
| SSW3001                   | Kejuruteraan Perisian<br><i>Software Engineering</i>  | 3  | 3 | 0 | CCS3101                   |

## 3. MODUL TERAS DISIPLIN | CORE DISCIPLINARY MODULES (33 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME   | Kr | K | A | PRASYARAT<br>PREREQUISITE  |
|---------------------------|--|----|---|---|----------------------------|
| CCS3003                   | Struktur Diskret<br><i>Discrete Structures</i>   | 3  | 3 | 0 | Tiada/None                 |
| CCS3101                   | Pengaturcaraan Berorientasikan Objek<br><i>Object-oriented Programming</i>                                 | 3  | 2 | 1 | CCS3100                    |
| CCS3104                   | Pengaturcaraan Lanjutan<br><i>Advanced Programming</i>   | 3  | 2 | 1 | CCS3101                    |
| CCS3202                   | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>                                       | 3  | 3 | 0 | CCS3101                    |
| CCS4202                   | Reka Bentuk dan Analisis Algoritma<br><i>Design and Analysis of Algorithms</i>                             | 3  | 3 | 0 | CCS3202                    |
| CCS4500                   | Keselamatan Komputer<br><i>Computer Security</i>   | 3  | 3 | 0 | CCS3300                    |
| CSM3001                   | Teknologi Multimedia<br><i>Multimedia Technology</i>   | 3  | 3 | 0 | Tiada/None                 |
| CSM3002                   | Matematik untuk Pengkomputeran Multimedia<br><i>Mathematics for Multimedia Computing</i>                   | 3  | 3 | 0 | CCS3100                    |
| CSM3601                   | Penyelesaian Masalah Menggunakan Kecerdasan Buatan<br><i>Problem Solving Using Artificial Intelligence</i> | 3  | 2 | 1 | CCS3101                    |
| SSW3307                   | Pengalaman Pengguna dan Antara Muka Pengguna<br><i>User Experience and User Interface</i>                  | 3  | 3 | 0 | SSW3302 atau/or<br>SSW3001 |
| SSW4202                   | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i>   | 3  | 3 | 0 | CCS3100                    |

## 4. PROJEK | PROJECT (6 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME                 | Kr | K | A | PRASYARAT<br>PREREQUISITE  |
|---------------------------|--|----|---|---|--|
| CSM4949                   | Projek Bachelor<br><i>Bachelor Project</i> | 6  | 0 | 6 | Dengan Kebenaran<br>Jabatan<br><i>With Department<br/>Permission</i> |

## 5. LATIHAN INDUSTRI | INDUSTRIAL TRAINING (12 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME                     | Kr | K | A  | PRASYARAT<br>PREREQUISITE  |
|---------------------------|--|----|---|----|--|
| CSM4901                   | Latihan Industri<br><i>Industrial Training</i> | 12 | 0 | 12 | Dengan Kebenaran<br>Jabatan<br><i>With Department<br/>Permission</i> |



**6. PENGKHUSUSAN | SPECIALIZATION (24 Kredit/Credits)**

| <b>KOD KURSUS<br/>COURSE CODE</b> | <b>NAMA KURSUS<br/>COURSE NAME</b>   | <b>Kr</b> | <b>K</b> | <b>A</b> | <b>PRASYARAT<br/>PREREQUISITE</b> |
|-----------------------------------|--|-----------|----------|----------|-----------------------------------|
| CND3400                           | Aplikasi Mudah Alih<br><i>Mobile Application</i>                                       | 3         | 2        | 1        | CCS3101                           |
| CSM3204                           | Grafik Komputer dan Kemasan<br><i>Computer Graphics and Rendering</i>                  | 3         | 2        | 1        | CCS3101                           |
| CSM3206                           | Pemprosesan Bahasa Tabii<br><i>Natural Language Processing</i>                         | 3         | 2        | 1        | CCS3202                           |
| CSM3307                           | Realiti Maya<br><i>Virtual Reality</i>   | 3         | 2        | 1        | CCS3101                           |
| CSM3315                           | Aplikasi Realiti Imbuhan<br><i>Augmented Reality Application</i>                       | 3         | 2        | 1        | CCS3101                           |
| CSM3401                           | Pembangunan Web Multimedia Interaktif<br><i>Interactive Multimedia Web Development</i> | 3         | 2        | 1        | CCS3101                           |
| CSM4300                           | Pengurusan Projek Multimedia<br><i>Multimedia Project Management</i>                   | 3         | 3        | 0        | SSW3001                           |
| CSM4317                           | Penglihatan Komputer<br><i>Computer Vision</i>   | 3         | 2        | 1        | CCS3101                           |

**7. MODUL BEBAS | FREE MODULES (12 Kredit/Credits)**

| <b>KOD KURSUS<br/>COURSE CODE</b> | <b>NAMA KURSUS<br/>COURSE NAME</b>  | <b>Kr</b> | <b>K</b> | <b>A</b> | <b>PRASYARAT<br/>PREREQUISITE</b> |
|-----------------------------------|---|-----------|----------|----------|-----------------------------------|
|                                   | Pelajar dikehendaki memilih sekurang-kurangnya 12 kredit daripada mana-mana kursus dalam atau luar bidang pengkomputeran dari mana-mana universiti dengan kebenaran Ketua Jabatan.<br>Students are required to choose at least 12 credits from any course inside or outside the field of computing from any university with the permission of the Head of Department. | 12        |          |          |                                   |

**SKEMA PENGAJIAN/STUDY SCHEME**  
**BACELOR SAINS KOMPUTER (PENGKOMPUTERAN MULTIMEDIA) DENGAN KEPUJIAN /**  
**BACHELOR OF COMPUTER SCIENCE (MULTIMEDIA COMPUTING) WITH HONOURS (MUET Band 2.0 – 2.5)**

| TAHUN 1 / 1 <sup>ST</sup> YEAR        |   |     |                                       |  |     |
|---------------------------------------|---|-----|---------------------------------------|--|-----|
| SEMESTER 1/1 <sup>ST</sup> SEMESTER   |   |     | SEMESTER 2/2 <sup>ND</sup> SEMESTER   |  |     |
| KOD/CODE                              | KURSUS/COURSE   | Kr  | KOD/CODE                              | KURSUS/COURSE  | Kr  |
| CCS3003                               | Struktur Diskret<br><i>Discrete Structures</i>  | 3+0 | CCS3101                               | Pengaturcaraan Berorientasikan Objek<br><i>Object-oriented Programming</i>                                   | 2+1 |
| CCS3100                               | Penyelesaian Masalah dan Konsep Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i> | 2+1 | CCS3200                               | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>                           | 3+0 |
| CSM3001                               | Teknologi Multimedia<br><i>Multimedia Technology</i>  | 3+0 | CND3200                               | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>                               | 3+0 |
| FEM2313                               | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>                                  | 1+0 | CSM3002                               | Matematik untuk Pengkomputeran Multimedia<br><i>Mathematics for Multimedia Computing</i>                     | 3+0 |
| SKP2101*                              | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>  | 3+0 | SKP3112*                              | Falsafah dan Isu Semasa<br><i>Philosophy and Current Issues</i>  | 2+0 |
| FEM2401**                             | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                          | 2+0 | SKP3113**                             | Falsafah dan Isu Semasa Masyarakat Sipil<br><i>Philosophy and Current Issues in Civil Society</i>            | 3+0 |
|                                       |   |     | atau/or<br>SKP3123**                  | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3+0 |
| PRT2009                               | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>  | 1+1 | XXXxxxx                               | Elektif Bebas<br><i>Free Electives</i>   | 3#  |
| QKXxxxx                               | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>   | 0+1 | QKXxxxx                               | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>  | 0+1 |
| LAX (12 mata/points)                  |   |     | CEL2102                               | <i>Effective Listening and Speaking</i>  |     |
|                                       |   |     | LAX (6 mata/points)                   |  |     |
| <b>JUMLAH/TOTAL</b>                   |   |     | <b>JUMLAH/TOTAL</b>                   |  |     |
| <b>16</b>                             |   |     | <b>18</b>                             |  |     |
| TAHUN 2 / 2 <sup>ND</sup> YEAR        |   |     |                                       |  |     |
| SEMESTER 1 / 1 <sup>ST</sup> SEMESTER |   |     | SEMESTER 2 / 2 <sup>ND</sup> SEMESTER |  |     |
| KOD/CODE                              | KURSUS/COURSE   | Kr  | KOD/CODE                              | KURSUS/COURSE  | Kr  |
| CCS3104                               | Pengaturcaraan Lanjutan<br><i>Advanced Programming</i>  | 2+1 | CCS4202                               | Reka Bentuk dan Analisis Algoritma<br><i>Design and Analysis of Algorithms</i>                               | 3+0 |
| CCS3202                               | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>                              | 3+0 | CSM3204                               | Grafik Komputer dan Kemasan<br><i>Computer Graphics and Rendering</i>  | 2+1 |
| CCS3300                               | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3+0 | CSM3401                               | Pembangunan Web Multimedia Interaktif<br><i>Interactive Multimedia Web Development</i>                       | 2+1 |
| CCS3400                               | Prinsip Pangkalan Data<br><i>Database Principles</i>  | 2+1 | CSM3601                               | Penyelesaian Masalah Menggunakan Kecerdasan Buatan<br><i>Problem Solving Using Artificial Intelligence</i>   | 2+1 |
| SKP3122*                              | Penghayatan Etika dan Peradaban/<br><i>Internalization of Ethics and Civilization</i>             | 2+0 | SSW3001                               | Kejuruteraan Perisian<br><i>Software Engineering</i>   | 3+0 |
| LPM2100**                             | Bahasa Melayu Komunikasi<br><i>Malay Language Communication</i>                                   | 2+0 |                                       |  |     |
| LPE2302                               | Pembacaan bagi Tujuan Akademik<br><i>Reading for Academic Purposes</i>                            | 3+0 | LPE2403                               | Interaksi dan Pembentangan Akademik<br><i>Academic Interaction and Presentation</i>                          | 3+0 |
| <b>JUMLAH/TOTAL</b>                   |   |     | <b>JUMLAH/TOTAL</b>                   |  |     |
| <b>17</b>                             |   |     | <b>18</b>                             |  |     |
| TAHUN 3 / 3 <sup>RD</sup> YEAR        |   |     |                                       |  |     |
| SEMESTER 1 / 1 <sup>ST</sup> SEMESTER |   |     | SEMESTER 2 / 2 <sup>ND</sup> SEMESTER |  |     |
| KOD/CODE                              | KURSUS/COURSE   | Kr  | KOD/CODE                              | KURSUS/COURSE  | Kr  |
| CCS4500                               | Keselamatan Komputer<br><i>Computer Security</i>  | 3+0 | CND3400                               | Aplikasi Mudah Alih<br><i>Mobile Application</i>   | 2+1 |
| CSM3206                               | Pemprosesan Bahasa Tabii<br><i>Natural Language Processing</i>                                    | 2+1 | CSM3315                               | Aplikasi Realiti Imbuan<br><i>Augmented Reality Application</i>  | 2+1 |
| CSM3207                               | Realiti Maya<br><i>Virtual Reality</i>  | 2+1 | CSM4949A                              | Projek Bachelo<br><i>Bachelor Project</i>  | 0+2 |
| CSM4300                               | Pengurusan Projek Multimedia<br><i>Multimedia Project Management</i>                              | 3+0 | SSW3307                               | Pengalaman Pengguna dan Antara Muka Pengguna<br><i>User Experience and User Interface</i>                    | 3+0 |
| CSM4317                               | Penglihatan Komputer<br><i>Computer Vision</i>  | 2+1 | SSW4202                               | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i>   | 3+0 |
| LPE2503                               | Penulisan Akademik<br><i>Academic Writing</i>   | 3+0 | XXXxxxx                               | Elektif Bebas<br><i>Free Elective</i>  | 3#  |
|                                       |   |     | CEL2105 / CEL2106 / CEL2107           |  |     |
| <b>JUMLAH/TOTAL</b>                   |   |     | <b>JUMLAH/TOTAL</b>                   |  |     |
| <b>18</b>                             |   |     | <b>17</b>                             |  |     |

| TAHUN 4 / 4TH YEAR          |   |           |                           |  |           |
|-----------------------------|---|-----------|---------------------------|--|-----------|
| SEMESTER 1 / 1ST SEMESTER   |   |           | SEMESTER 2 / 2ND SEMESTER |  |           |
| KOD/CODE                    | KURSUS/COURSE   | Kr        | KOD/CODE                  | KURSUS/COURSE                                  | Kr        |
| CSM4949B                    | Projek Bachelor<br><i>Bachelor Project</i>              | 0+4       | CSM4901                   | Latihan Industri<br><i>Industrial Training</i> | 0+12      |
| SSW3200                     | Keusahawanan Digital<br><i>Digital Entrepreneurship</i> | 2+1       |                           |  |           |
| XXXxxxx                     | Elektif Bebas<br><i>Free Electives</i>                  | 6#        |                           |  |           |
| CEL2105 / CEL2106 / CEL2107 |   |           |                           |  |           |
| LAX (6 mata/points)         |   |           |                           |  |           |
| <b>JUMLAH/TOTAL</b>         |   | <b>13</b> | <b>JUMLAH/TOTAL</b>       |  | <b>12</b> |

**Nota/Note:**

- \*Pelajar tempatan/*Local student*, \*\*Pelajar antarabangsa/*International student*
- #Pelajar perlu mengambil 12 kredit kursus Elektif Bebas bagi keperluan bergraduat/ # *Student has to take 12 credits Free Electives courses for graduation requirements.*
- LPE2302 tidak dikira dalam kredit bergraduat/*LPE2302 not counted in graduation credits*

**SKEMA PENGAJIAN/STUDY SCHEME**  
**BACELOR SAINS KOMPUTER (PENGKOMPUTERAN MULTIMEDIA) DENGAN KEPUJIAN /**  
**BACHELOR OF COMPUTER SCIENCE (MULTIMEDIA COMPUTING) WITH HONOURS (MUET Band 3.0 - 4.5)**

| TAHUN 1 / 1 <sup>ST</sup> YEAR        |   |           |                                       |  |           |
|---------------------------------------|---|-----------|---------------------------------------|--|-----------|
| SEMESTER 1/1 <sup>ST</sup> SEMESTER   |   |           | SEMESTER 2/2 <sup>ND</sup> SEMESTER   |  |           |
| KOD/CODE                              | KURSUS/COURSE   | Kr        | KOD/CODE                              | KURSUS/COURSE  | Kr        |
| CCS3003                               | Struktur Diskret<br><i>Discrete Structures</i>  | 3+0       | CCS3101                               | Pengaturcaraan Berorientasikan Objek<br><i>Object-oriented Programming</i>                                   | 2+1       |
| CCS3100                               | Penyelesaian Masalah dan Konsep Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i> | 2+1       | CCS3200                               | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>                           | 3+0       |
| CSM3001                               | Teknologi Multimedia<br><i>Multimedia Technology</i>  | 3+0       | CND3200                               | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>                               | 3+0       |
| FEM2313                               | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>                                  | 1+0       | CSM3002                               | Matematik untuk Pengkomputeran Multimedia<br><i>Mathematics for Multimedia Computing</i>                     | 3+0       |
| SKP2101*                              | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>  | 3+0       | SKP3112*                              | Falsafah dan Isu Semasa/<br><i>Philosophy and Current Issues</i>   | 2+0       |
| FEM2401**                             | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                          | 2+0       | SKP3113**                             | Falsafah dan Isu Semasa Masyarakat Sipil/<br><i>Philosophy and Current Issues in Civil Society</i>           | 3+0       |
|                                       |   |           | atau/or<br>SKP3123**                  | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3+0       |
| PRT2009                               | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>  | 1+1       | LPE2403                               | Interaksi dan Pembentangan Akademik<br><i>Academic Interaction and Presentation</i>                          | 3+0       |
| QKXxxxx                               | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>   | 0+1       | QKXxxxx                               | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>  | 0+1       |
| LAX (6 mata/points)                   |   |           |                                       |  |           |
| <b>JUMLAH/TOTAL</b>                   |   | <b>16</b> | <b>JUMLAH/TOTAL</b>                   |  | <b>18</b> |
| TAHUN 2 / 2 <sup>ND</sup> YEAR        |   |           |                                       |  |           |
| SEMESTER 1 / 1 <sup>ST</sup> SEMESTER |   |           | SEMESTER 2 / 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                              | KURSUS/COURSE   | Kr        | KOD/CODE                              | KURSUS/COURSE  | Kr        |
| CCS3104                               | Pengaturcaraan Lanjutan<br><i>Advanced Programming</i>  | 2+1       | CCS4202                               | Reka Bentuk dan Analisis Algoritma<br><i>Design and Analysis of Algorithms</i>                               | 3+0       |
| CCS3202                               | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>                              | 3+0       | CSM3204                               | Grafik Komputer dan Kemasan<br><i>Computer Graphics and Rendering</i>  | 2+1       |
| CCS3300                               | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3+0       | CSM3401                               | Pembangunan Web Multimedia Interaktif<br><i>Interactive Multimedia Web Development</i>                       | 2+1       |
| CCS3400                               | Prinsip Pangkalan Data<br><i>Database Principles</i>  | 2+1       | CSM3601                               | Penyelesaian Masalah Menggunakan Kecerdasan Buatan<br><i>Problem Solving Using Artificial Intelligence</i>   | 2+1       |
| SKP3122*                              | Penghayatan Etika dan Peradaban/<br><i>Internalization of Ethics and Civilization</i>             | 2+0       | SSW3001                               | Kejuruteraan Perisian<br><i>Software Engineering</i>   | 3+0       |
| LPM2100**                             | Bahasa Melayu Komunikasi/<br><i>Malay Language Communication</i>                                  | 2+0       | XXXxxxx                               | Elektif Bebas<br><i>Free Elective</i>  | 3#        |
| LPE2503                               | Penulisan Akademik<br><i>Academic Writing</i>   | 3+0       | LAX (6 mata/points)                   |  |           |
| <b>JUMLAH/TOTAL</b>                   |   | <b>17</b> | <b>JUMLAH/TOTAL</b>                   |  | <b>18</b> |
| TAHUN 3 / 3 <sup>RD</sup> YEAR        |   |           |                                       |  |           |
| SEMESTER 1 / 1 <sup>ST</sup> SEMESTER |   |           | SEMESTER 2 / 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                              | KURSUS/COURSE   | Kr        | KOD/CODE                              | KURSUS/COURSE  | Kr        |
| CCS4500                               | Keselamatan Komputer<br><i>Computer Security</i>  | 3+0       | CND3400                               | Aplikasi Mudah Alih<br><i>Mobile Application</i>   | 2+1       |
| CSM3206                               | Pemprosesan Bahasa Tabii<br><i>Natural Language Processing</i>                                    | 2+1       | CSM3315                               | Aplikasi Realiti Imbuhan<br><i>Augmented Reality Application</i>   | 2+1       |
| CSM3207                               | Realiti Maya<br><i>Virtual Reality</i>  | 2+1       | CSM4949A                              | Projek Bachelo/ Bachelor Project   | 0+2       |
| CSM4300                               | Pengurusan Projek Multimedia<br><i>Multimedia Project Management</i>                              | 3+0       | SSW3307                               | Pengalaman Pengguna dan Antara Muka Pengguna<br><i>User Experience and User Interface</i>                    | 3+0       |
| CSM4317                               | Penglihatan Komputer<br><i>Computer Vision</i>  | 2+1       | SSW4202                               | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i>   | 3+0       |
| XXXxxxx                               | Elektif Bebas<br><i>Free Elective</i>   | 3#        |                                       |  |           |
| CEL2105 / CEL2106 / CEL2107           |   |           | CEL2105 / CEL2106 / CEL2107           |  |           |
| <b>JUMLAH/TOTAL</b>                   |   | <b>18</b> | <b>JUMLAH/TOTAL</b>                   |  | <b>14</b> |

| TAHUN 4 / 4TH YEAR          |   |           |                           |  |           |
|-----------------------------|---|-----------|---------------------------|--|-----------|
| SEMESTER 1 / 1ST SEMESTER   |   |           | SEMESTER 2 / 2ND SEMESTER |  |           |
| KOD/CODE                    | KURSUS/COURSE   | Kr        | KOD/CODE                  | KURSUS/COURSE                                  | Kr        |
| CSM4949B                    | Projek Bachelor<br><i>Bachelor Project</i>              | 0+4       | CSM4901                   | Latihan Industri<br><i>Industrial Training</i> | 0+12      |
| SSW3200                     | Keusahawanan Digital<br><i>Digital Entrepreneurship</i> | 2+1       |                           |  |           |
| XXXxxxx                     | Elektif Bebas<br><i>Free Electives</i>                  | 6#        |                           |  |           |
| CEL2105 / CEL2106 / CEL2107 |   |           |                           |  |           |
| LAX (12 mata/points)        |   |           |                           |  |           |
| <b>JUMLAH/TOTAL</b>         |   | <b>13</b> | <b>JUMLAH/TOTAL</b>       |  | <b>12</b> |

**Nota/Note:**

- \*Pelajar tempatan/*Local student*, \*\*Pelajar antarabangsa/*International student*
- #Pelajar perlu mengambil 12 kredit kursus Elektif Bebas bagi keperluan bergraduat/ # *Student has to take 12 credits Free Electives courses for graduation requirements.*


**SKEMA PENGAJIAN/STUDY SCHEME**  
**BACELOR SAINS KOMPUTER (PENGGOMPUTERAN MULTIMEDIA) DENGAN KEPUJIAN /**  
**BACHELOR OF COMPUTER SCIENCE (MULTIMEDIA COMPUTING) WITH HONOURS (MUET Band 5.0 - 5+)**

| TAHUN 1 / 1 <sup>ST</sup> YEAR                               |   |           |                                       |  |           |
|--|---|-----------|---------------------------------------|--|-----------|
| SEMESTER 1/1 <sup>ST</sup> SEMESTER                          |   |           | SEMESTER 2/2 <sup>ND</sup> SEMESTER   |  |           |
| KOD/CODE   | KURSUS/COURSE   | Kr        | KOD/CODE                              | KURSUS/COURSE  | Kr        |
| CCS3003  | Struktur Diskret<br><i>Discrete Structures</i>  | 3+0       | CCS3101                               | Pengaturcaraan Berorientasikan Objek<br><i>Object-oriented Programming</i>                                   | 2+1       |
| CCS3100  | Penyelesaian Masalah dan Konsep Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i> | 2+1       | CCS3200                               | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>                           | 3+0       |
| CSM3001  | Teknologi Multimedia<br><i>Multimedia Technology</i>  | 3+0       | CND3200                               | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>                               | 3+0       |
| FEM2313  | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>                                  | 1+0       | CSM3002                               | Matematik untuk Pengkomputeran Multimedia<br><i>Mathematics for Multimedia Computing</i>                     | 3+0       |
| SKP2101*   | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>  | 3+0       | SKP3112*                              | Falsafah dan Isu Semasa/<br><i>Philosophy and Current Issues</i>   | 2+0       |
| FEM2401**  | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                          | 2+0       | SKP3113**                             | Falsafah dan Isu Semasa Masyarakat Sivill/<br><i>Philosophy and Current Issues in Civil Society</i>          | 3+0       |
|  |   |           | atau/or<br>SKP3123**                  | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3+0       |
| PRT2009  | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>  | 1+1       | XXXxxxx                               | Elektif Bebas<br><i>Free Elective</i>  | 3#        |
| QKXxxxx  | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>   | 0+1       | QKXxxxx                               | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>  | 0+1       |
| LAX (6 mata/points)  |   |           | CEL 2103 / CEL2104                    |  |           |
| <b>JUMLAH/ TOTAL</b>   |   | <b>16</b> | <b>JUMLAH/ TOTAL</b>                  |  | <b>18</b> |
| TAHUN 2 / 2 <sup>ND</sup> YEAR                               |   |           |                                       |  |           |
| SEMESTER 1 / 1 <sup>ST</sup> SEMESTER                        |   |           | SEMESTER 2 / 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE   | KURSUS/COURSE   | Kr        | KOD/CODE                              | KURSUS/COURSE  | Kr        |
| CCS3104  | Pengaturcaraan Lanjutan<br><i>Advanced Programming</i>  | 2+1       | CCS4202                               | Reka Bentuk dan Analisis Algoritma<br><i>Design and Analysis of Algorithms</i>                               | 3+0       |
| CCS3202  | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>                              | 3+0       | CSM3204                               | Grafik Komputer dan Kemasan<br><i>Computer Graphics and Rendering</i>  | 2+1       |
| CCS3300  | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3+0       | CSM3401                               | Pembangunan Web Multimedia Interaktif<br><i>Interactive Multimedia Web Development</i>                       | 2+1       |
| CCS3400  | Prinsip Pangkalan Data<br><i>Database Principles</i>  | 2+1       | CSM3601                               | Penyelesaian Masalah Menggunakan Kecerdasan Buatan<br><i>Problem Solving Using Artificial Intelligence</i>   | 2+1       |
| SKP3122*   | Penghayatan Etika dan Peradaban/<br><i>Internalization of Ethics and Civilization</i>             | 2+0       | SSW3001                               | Kejuruteraan Perisian<br><i>Software Engineering</i>   | 3+0       |
| LPM2100**  | Bahasa Melayu Komunikasi/<br><i>Malay Language Communication</i>                                  | 2+0       | XXXxxxx                               | Elektif Bebas<br><i>Free Elective</i>  | 3#        |
| LPE2303 / LPE2504 / Bahasa Global/<br><i>Global Language</i> |   | 3+0       | LAX (6 mata/points)                   |  |           |
| <b>JUMLAH/TOTAL</b>  |   | <b>17</b> | <b>JUMLAH/TOTAL</b>                   |  | <b>18</b> |
| TAHUN 3 / 3 <sup>RD</sup> YEAR                               |   |           |                                       |  |           |
| SEMESTER 1 / 1 <sup>ST</sup> SEMESTER                        |   |           | SEMESTER 2 / 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE   | KURSUS/COURSE   | Kr        | KOD/CODE                              | KURSUS/COURSE  | Kr        |
| CCS4500  | Keselamatan Komputer<br><i>Computer Security</i>  | 3+0       | CND3400                               | Aplikasi Mudah Alih<br><i>Mobile Application</i>   | 2+1       |
| CSM3206  | Pemprosesan Bahasa Tabii<br><i>Natural Language Processing</i>                                    | 2+1       | CSM3315                               | Aplikasi Realiti Imbuan<br><i>Augmented Reality Application</i>  | 2+1       |
| CSM3207  | Realiti Maya<br><i>Virtual Reality</i>  | 2+1       | CSM4949A                              | Projek Bachelord/ Bachelor Project   | 0+2       |
| CSM4300  | Pengurusan Projek Multimedia<br><i>Multimedia Project Management</i>                              | 3+0       | SSW3307                               | Pengalaman Pengguna dan Antara Muka Pengguna<br><i>User Experience and User Interface</i>                    | 3+0       |
| CSM4317  | Penglihatan Komputer<br><i>Computer Vision</i>  | 2+1       | SSW4202                               | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i>   | 3+0       |
| LPE2303 / LPE2504 / Bahasa Global/<br><i>Global Language</i> |   | 3+0       | LAX (6 mata/points)                   |  |           |
| <b>JUMLAH/TOTAL</b>  |   | <b>18</b> | <b>JUMLAH/TOTAL</b>                   |  | <b>14</b> |

| TAHUN 4 / 4TH YEAR        |   |     |                           |  |      |
|---------------------------|---|-----|---------------------------|--|------|
| SEMESTER 1 / 1ST SEMESTER |   |     | SEMESTER 2 / 2ND SEMESTER |  |      |
| KOD/CODE                  | KURSUS/COURSE   | Kr  | KOD/CODE                  | KURSUS/COURSE                                  | Kr   |
| CSM4949B                  | Projek Bachelor<br><i>Bachelor Project</i>              | 0+4 | CSM4901                   | Latihan Industri<br><i>Industrial Training</i> | 0+12 |
| SSW3200                   | Keusahawanan Digital<br><i>Digital Entrepreneurship</i> | 2+1 |                           |  |      |
| XXXxxxx                   | Elektif Bebas<br><i>Free Electives</i>                  | 6#  |                           |  |      |
| LAX (6 mata/points)       |   |     |                           |  |      |
| <b>JUMLAH/TOTAL</b>       |   |     | <b>JUMLAH/TOTAL</b>       |  |      |
| <b>13</b>                 |   |     | <b>12</b>                 |  |      |

**Nota/Note:**

- \*Pelajar tempatan/*Local student*, \*\*Pelajar antarabangsa/*International student*
- #Pelajar perlu mengambil 12 kredit kursus Elektif Bebas bagi keperluan bergraduat/ # *Student has to take 12 credits Free Electives courses for graduation requirements.*

A decorative graphic consisting of several overlapping, semi-transparent blue shapes that form a triangular pattern pointing to the right, located in the top-left corner of the page.

Bachelor Sains Komputer  
(Rangkaian Komputer)  
dengan Kepujian  
*Bachelor of Computer Science  
(Computer Network)  
with Honours*



## STRUKTUR KURIKULUM | CURRICULUM STRUCTURE

|  |   |
|--|---|
| <b>Nama Program</b><br><i>Program Name</i>                         | : Bacelor Sains Komputer (Rangkaian Komputer) dengan Kepujian/<br><i>Bachelor of Computer Science (Computer Network) with Honours</i>   |
| <b>Jumlah Kredit Bergraduat</b><br><i>Total Credit to Graduate</i> | : 126 Jam Kredit/ <i>Credit Hours</i>   |
| <b>Tempoh Pengajian</b><br><i>Length of Study</i>                  | : 8 Semester/ <i>Semesters</i> (4 Tahun/ <i>Years</i> )   |
| <b>Matlamat Program</b><br><i>Program Goals</i>                    | : <ol style="list-style-type: none"> <li>Menghasilkan profesional sains komputer yang berupaya menyediakan penyelesaian pengkomputeran bagi masalah bukan-rutin berdasarkan pengetahuan dan kemahiran teknikal bersesuaian dalam bidang rangkaian komputer mengikut keperluan industri.<br/><i>To produce computer science professionals who are able to provide computing solutions for non-routine problems based on appropriate knowledge and technical skills in the field of computer network according to the industry requirements.</i></li> <li>Menghasilkan profesional sains komputer yang berkebolehan memimpin serta mampu berkomunikasi secara efektif.<br/><i>To produce computer science professionals who are able to lead as well as communicate effectively.</i></li> <li>Menghasilkan profesional sains komputer yang mempunyai minda keusahawanan dan komited dalam penerokaan ilmu sepanjang hayat bagi pemajuan kerjaya.<br/><i>To produce computer science professionals who have an entrepreneurial mindset and committed in the exploration of lifelong learning for career progression.</i></li> <li>Menghasilkan profesional sains komputer yang mengamalkan sikap beretika dan berintegriti dalam pembangunan diri dan kerjaya.<br/><i>To produce computer science professionals who uphold ethics and integrity in personal and career development.</i></li> </ol> |

## RINGKASAN HASIL PEMBELAJARAN PROGRAM | SUMMARY OF PROGRAM LEARNING OUTCOMES

| PROGRAM   | Hasil Pembelajaran Program                                       |  |  |  |   |   |  |   |  |  |   |
|---|--|--|--|--|---|---|--|---|--|--|---|
|   | Menganalisis konsep, prinsip dan teori berkaitan Sains Komputer. | Membina penyelesaian pengkomputeran menggunakan algoritma dan teknik bersesuaian bagi masalah bukan-rutin. | Mengaplikasi algoritma dan teknik yang sesuai untuk penyelesaian pengkomputeran. | Menunjukkan interaksi berkesan dengan pelbagai pihak berkepentingan. | Mempamerkan komunikasi berkesan dengan pelbagai pihak berkepentingan. | Menggunakan kemahiran digital untuk menyelesaikan masalah dalam bidang pengajian. | Menggunakan kemahiran numerasi untuk menyelesaikan masalah dalam bidang pengajian. | Menunjukkan kerja berpasukan, akauntabiliti dan tanggungjawab dalam menyampaikan penyelesaian yang berkaitan dengan bidang pengajian. | Mempamerkan keupayaan untuk melanjutkan pengetahuan yang relevan melalui pembelajaran sepanjang hayat. | Menerapkan minda keusahawanan dalam memberikan penyelesaian. | Menegakkan amalan profesional dan etika dalam persekitaran kerja. |
|   | CPS 3-1  | CPS 3-2  | CPS 3-3  | CPS 3-4  | CPS 3-5   | CPS 3-6   | CPS 3-7  | CPS 3-8   | CPS 3-9  | CPS 3-10   | CPS 3-11  |
|   | PO1  | PO3  | PO2  | PO5  | PO4   | PO7   | PO10   | PO9   | PO8  | PO8  | PO6   |
|   | C  | CTPS   | P  | TS   | CS  | DS  | NS   | LS  | LL   | KK   | EM  |
| <b>Bacelor Sains Komputer (Rangkaian Komputer) dengan Kepujian</b><br><i>Bachelor of Computer Science (Computer Network) with Honours</i> | 39   | 19   | 25   | 9  | 9   | 9   | 5  | 5   | 10   | 5  | 9   |

## 1. KURSUS MPU DAN UNIVERSITI | MPU AND UNIVERSITY COURSES (21 Kredit/Credits)

| KOD KURSUS<br>COURSE<br>CODE | NAMA KURSUS<br>COURSE NAME   | Kr | K | A | PRASYARAT<br>PREREQUISITE      |
|------------------------------|--|----|---|---|--------------------------------|
| SKP3112*                     | Falsafah dan Isu Semasa<br><i>Philosophy and Current Issues</i>  | 2  | 2 | 0 | Tiada/None                     |
| SKP3113**                    | Falsafah dan Isu Semasa Masyarakat Sipil<br><i>Philosophy and Current Issues in Civil Society</i>            | 3  | 3 | 0 | Tiada/None                     |
| Atau/Or                      | Atau/Or  |    |   |   |                                |
| SKP3123**                    | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3  | 3 | 0 | Tiada/None                     |
| SKP3122*                     | Penghayatan Etika dan Peradaban<br><i>Internalization of Ethics and Civilization</i>                         | 2  | 2 | 0 | Tiada/None                     |
| LPM2100**                    | Bahasa Melayu Komunikasi<br><i>Malay Language Communication</i>  | 2  | 2 | 0 | Tiada/None                     |
| SSW3200                      | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>  | 3  | 2 | 1 | Tiada/None                     |
| SKP2101*                     | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>   | 3  | 3 | 0 | Tiada/None                     |
| FEM2401**                    | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                                     | 2  | 2 | 0 |                                |
| FEM2313                      | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>   | 1  | 1 | 0 | Tiada/None                     |
| QKXxxxx                      | Ko-kurikulum<br><i>Co-curriculum</i>   | 1  | 0 | 1 |                                |
| QKXxxxx                      | Ko-kurikulum<br><i>Co-curriculum</i>   | 1  | 0 | 1 |                                |
| LPE2403                      | Interaksi dan Pembentangan Akademik<br><i>Academic Interaction and Presentation</i>                          | 3  | 3 | 0 | LPE2302/MUET<br>Band 3.0 – 4.5 |
| LPE2503                      | Penulisan Akademik<br><i>Academic Writing</i>  | 3  | 3 | 0 | LPE2403                        |
| PRT2009                      | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>   | 2  | 1 | 1 | Tiada/None                     |

### Nota/Note:

- Kr = Jam Kredit/Credit Hour, K = Kuliah/Lecture, A = Amali/Laboratory, T = Tutorial
- \*Pelajar Tempatan/Local Students \*\*Pelajar Antarabangsa/International Students
- Pelajar diwajibkan memilih **2 kredit** daripada **kursus ko-kurikulum** yang ditawarkan oleh Universiti.  
*It is compulsory for students to take 2 credits of co-curriculum courses offered by the University.*
- Pelajar perlu melengkapkan pakej keperluan Bahasa Inggeris seperti jadual di bawah (Butiran lanjut mengenai CEL dan LAX sila rujuk di muka surat 4 buku panduan ini).  
*Students need to complete the English package as in the table below (For more details on CEL and LAX please refer to page 4 of this book).*

| CEFR           | MUET                       |                          | IELTS         | TOEFL<br>iBT  | CIEP           | Pearson<br>Test of<br>English<br>(PTE)<br>Academic | Cambridge<br>English | Keperluan Bergraduat  <br>Graduation Requirement   |
|----------------|----------------------------|--------------------------|---------------|---------------|----------------|--|----------------------|--|
| Tahap<br>Level | Band<br>(Previous<br>ver.) | Band<br>(Latest<br>ver.) | Skor<br>Score | Skor<br>Score | Tahap<br>Level | Skor<br>Score                                      | Skor<br>Score        |  |
| C1 – C2        | 5 - 6                      | 5.0 - 5+                 | 7.0 - 9.0     | 95 - 120      | N/A            | 76 - 90  | 180 - 230            | 2 LPE + 1 CEL + 24<br>mata/point LAX<br><b>atau / or</b><br>1 LPE + 1 CEL + 24<br>mata/point LAX<br>+ 1 Bahasa Global/Global<br>Language |
| B1 – B2        | 3 - 4                      | 3.0 - 4.5                | 4.0 - 6.5     | 42 - 94       | 104 - 109      | 43 - 75  | 140 - 179            | 2 LPE + 2 CEL +<br>24 mata/point LAX   |
| A1 – A2        | 1 - 2                      | 1.0 - 2.5                | 2.5 - 3.5     | N/A           | 101 - 103      | 24 - 42  | 100 - 139            | 3 LPE + 3 CEL +<br>24 mata/point LAX   |

## 2. MODUL TERAS KOMPUTERAN | CORE COMPUTING MODULES (18 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME  | Kr | K | A | PRASYARAT<br>PREREQUISITE |
|---------------------------|---|----|---|---|---------------------------|
| CCS3100                   | Penyelesaian Masalah dan Konsep Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i> | 3  | 2 | 1 | Tiada/None                |
| CCS3200                   | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>                | 3  | 3 | 0 | CCS3100                   |
| CCS3300                   | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3  | 3 | 0 | CCS3200                   |
| CCS3400                   | Prinsip Pangkalan Data<br><i>Database Principles</i>  | 3  | 2 | 1 | CCS3101                   |
| CND3200                   | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>                    | 3  | 3 | 0 | Tiada/None                |
| SSW3001                   | Kejuruteraan Perisian<br><i>Software Engineering</i>  | 3  | 3 | 0 | CCS3101                   |

## 3. MODUL TERAS DISIPLIN | CORE DISCIPLINARY MODULES (33 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME  | Kr | K | A | PRASYARAT<br>PREREQUISITE  |
|---------------------------|---|----|---|---|----------------------------|
| CCS3003                   | Struktur Diskret<br><i>Discrete Structures</i>  | 3  | 3 | 0 | Tiada/None                 |
| CCS3101                   | Pengaturcaraan Berorientasikan Objek<br><i>Object-oriented Programming</i>                | 3  | 2 | 1 | CCS3100                    |
| CCS3202                   | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>                      | 3  | 3 | 0 | CCS3101                    |
| CCS3600                   | Kecerdasan Buatan<br><i>Artificial Intelligence</i>                                       | 3  | 3 | 0 | CCS3202                    |
| CCS3402                   | Pembangunan Aplikasi Pangkalan Data<br><i>Database Application Development</i>            | 3  | 2 | 1 | CCS3400                    |
| SSW3307                   | Pengalaman Pengguna dan Antara Muka Pengguna<br><i>User Experience and User Interface</i> | 3  | 3 | 0 | SSW3302 atau/or<br>SSW3001 |
| SSW4202                   | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i>                                  | 3  | 3 | 0 | CCS3100                    |
| CND3101                   | Pengaturcaraan Python<br><i>Python Programming</i>  | 3  | 2 | 1 | CCS3100                    |
| CND3202                   | Pengkomputeran Teragih dan Selari<br><i>Distributed and Parallel Computing</i>            | 3  | 2 | 1 | CND3200                    |
| CND3400                   | Aplikasi Mudah Alih<br><i>Mobile Application</i>  | 3  | 2 | 1 | CCS3101                    |
| CND4300                   | Rangkaian Tentuan Perisian<br><i>Software Defined Network</i>                             | 3  | 3 | 0 | CND3201                    |

## 4. PROJEK | PROJECT (6 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME                | Kr | K | A | PRASYARAT<br>PREREQUISITE   |
|---------------------------|---|----|---|---|---|
| CND4949                   | Projek Bachelo<br><i>Bachelor Project</i> | 6  | 0 | 6 | Dengan<br>Kebenaran<br>Jabatan<br><i>With Department<br/>Permission</i> |

## 5. LATIHAN INDUSTRI | INDUSTRIAL TRAINING (12 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME                     | Kr | K | A  | PRASYARAT<br>PREREQUISITE   |
|---------------------------|--|----|---|----|---|
| CND4901                   | Latihan Industri<br><i>Industrial Training</i> | 12 | 0 | 12 | Dengan<br>Kebenaran<br>Jabatan<br><i>With<br/>Department<br/>Permission</i> |

**6. MODUL PENGKHUSUSAN | SPECIALIZATION MODULES (24 Kredit/Credits)**

| <b>KOD KURSUS<br/>COURSE CODE</b> | <b>NAMA KURSUS<br/>COURSE NAME</b>   | <b>Kr</b> | <b>K</b> | <b>A</b> | <b>PRASYARAT<br/>PREREQUISITE</b> |
|-----------------------------------|--|-----------|----------|----------|-----------------------------------|
| CND3201                           | Teknologi Antara Rangkaian<br><i>Internetworking Technology</i>                                    | 3         | 2        | 1        | CND3200                           |
| CND3100                           | Pengaturcaraaan Rangkaian<br><i>Network Programming</i>  | 3         | 2        | 1        | CND3200                           |
| CND3300                           | Pentadbiran Sistem dan Rangkaian<br><i>System and Network Administration</i>                       | 3         | 2        | 1        | CND3200                           |
| CND4400                           | Sistem Teragih<br><i>Distributed Systems</i>   | 3         | 3        | 0        | CND3200                           |
| CND4200                           | Reka Bentuk dan Pengurusan Rangkaian Perusahaan<br><i>Enterprise Network Design and Management</i> | 3         | 3        | 0        | CND3200                           |
| CND4500                           | Keselamatan Rangkaian<br><i>Network Security</i>   | 3         | 3        | 0        | CND3200                           |
| CND4201                           | Rangkaian Wayarles dan Bergerak<br><i>Wireless and Mobile Network</i>                              | 3         | 3        | 0        | CND3200                           |
| CND4401                           | Pengkomputeran Awan<br><i>Cloud Computing</i>  | 3         | 3        | 0        | CND3200                           |

**7. MODUL BEBAS | FREE MODULES (12 Kredit/Credits)**

| <b>KOD KURSUS<br/>COURSE CODE</b> | <b>NAMA KURSUS<br/>COURSE NAME</b>  | <b>Kr</b> | <b>K</b> | <b>A</b> | <b>PRASYARAT<br/>PREREQUISITE</b> |
|-----------------------------------|---|-----------|----------|----------|-----------------------------------|
|                                   | Pelajar dikehendaki memilih sekurang-kurangnya 12 kredit daripada mana-mana kursus dalam atau luar bidang pengkomputeran dari mana-mana universiti dengan kebenaran Ketua Jabatan.<br>Students are required to choose at least 12 credits from any course inside or outside the field of computing from any university with the permission of the Head of Department. | 12        |          |          |                                   |

**SKEMA PENGAJIAN/STUDY SCHEME**  
**BACHELOR SAINS KOMPUTER (RANGKAIAN KOMPUTER) DENGAN KEPUJIAN/**  
**BACHELOR OF COMPUTER SCIENCE (COMPUTER NETWORK) WITH HONOURS (MUET Band 2.0- 2.5)**

| TAHUN 1/ 1 <sup>ST</sup> YEAR        |  |           |                                      |  |           |
|--------------------------------------|--|-----------|--------------------------------------|--|-----------|
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |           | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                             | KURSUS/ COURSE   | Kr        | KOD/CODE                             | KURSUS/ COURSE   | Kr        |
| SKP2101*                             | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>   | 3+0       | SKP3122*                             | Penghayatan Etika dan Peradaban<br><i>Internalization of Ethics and Civilization</i> | 2+0       |
| FEM2401**                            | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                                     | 2+0       | LPM2100**                            | Bahasa Melayu Komunikasi<br><i>Malay Language Communication</i>                      | 2+0       |
| PRT2009                              | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>   | 1+1       | CCS3200                              | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>   | 3+0       |
| SKP3112*                             | Falsafah dan Isu Semasa<br><i>Philosophy and Current Issues</i>  | 2+0       | CCS3101                              | Pengaturcaraan Berorientasikan Objek<br><i>Object-Oriented Programming</i>           | 2+1       |
| SKP3113**                            | Falsafah dan Isu Semasa Masyarakat Sipil<br><i>Philosophy and Current Issues in Civil Society</i>            | 3+0       | CND3101                              | Pengaturcaraan Python<br><i>Python Programming</i>                                   | 2+1       |
| atau/ or<br>SKP3123**                | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3+0       |                                      |  |           |
| FEM2313                              | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>   | 1+0       | CND3200                              | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>       | 3+0       |
| CCS3100                              | Penyelesaian Masalah dan Konsep<br>Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i>         | 2+1       | CEL2102                              | <i>Effective Listening and Speaking</i>  |           |
| CCS3003                              | Struktur Diskret<br><i>Discrete Structures</i>   | 3+0       |                                      |  |           |
| QKXxxxx                              | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>  | 0+1       | QKXxxxx                              | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>  | 0+1       |
| LAX (12 mata/points)                 |  |           | LAX (6 mata/ points)                 |  |           |
| <b>JUMLAH/ TOTAL</b>                 |  | <b>15</b> | <b>JUMLAH/TOTAL</b>                  |  | <b>15</b> |
| TAHUN 2/ 2 <sup>ND</sup> YEAR        |  |           |                                      |  |           |
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |           | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                             | KURSUS/ COURSE   | Kr        | KOD/CODE                             | KURSUS/ COURSE   | Kr        |
| CCS3202                              | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>   | 3+0       | CCS3600                              | Kecerdasan Buatan<br><i>Artificial Intelligence</i>                                  | 2+1       |
| CCS3400                              | Prinsip Pangkalan Data<br><i>Database Principles</i>   | 2+1       | SSW3001                              | Kejuruteraan Perisian<br><i>Software Engineering</i>                                 | 3+0       |
| CCS3300                              | Sistem Pengoperasian<br><i>Operating Systems</i>   | 3+0       | CNS3201                              | Teknologi Antara Rangkaian<br><i>Internetworking Technology</i>                      | 2+1       |
| CND3300                              | Pentadbiran Sistem dan Rangkaian<br><i>System and Network Administration</i>                                 | 2+1       | CCS3402                              | Pembangunan Aplikasi Pangkalan Data<br><i>Database Application Development</i>       | 2+1       |
| XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>  | 3#        | CND4400                              | Sistem Teragih<br><i>Distributed Systems</i>   | 3+0       |
|                                      |  |           | XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>  | 3#        |
| LPE2302                              | Pembacaan bagi Tujuan Akademik<br><i>Reading for Academic Purposes</i>                                       | 3+0       | LPE2403                              | Interaksi dan Pembentangan Akademik<br><i>Academic Interaction and Presentation</i>  | 3+0       |
| <b>JUMLAH/ TOTAL</b>                 |  | <b>18</b> | <b>JUMLAH/ TOTAL</b>                 |  | <b>21</b> |
| TAHUN 3/ 3 <sup>RD</sup> YEAR        |  |           |                                      |  |           |
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |           | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                             | KURSUS/ COURSE   | Kr        | KOD/CODE                             | KURSUS/ COURSE   | Kr        |
| SSW3307                              | Antara Muka Pengguna dan Pengalaman<br>Pengguna<br><i>User Interface and User Experience</i>                 | 3+0       | CND3202                              | Pengkomputeran Teragih dan Selari<br><i>Distributed and Parallel Computing</i>       | 2+1       |
| CND3100                              | Pengaturcaraan Rangkaian<br><i>Network Programming</i>   | 2+1       | CND4300                              | Rangkaian Tentuan Perisian<br><i>Software Defined Network</i>                        | 3+0       |
| CND4200                              | Reka Bentuk dan Pengurusan Rangkaian<br>Perusahaan<br><i>Enterprise Network Design and Management</i>        | 3+0       | CND4201                              | Rangkaian Wayarles dan Bergerak<br><i>Wireless and Mobile Network</i>                | 3+0       |
| CND4500                              | Keselamatan Rangkaian<br><i>Network Security</i>   | 3+0       | CND3400                              | Aplikasi Mudah Alih<br><i>Mobile Application</i>                                     | 2+1       |
| XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>  | 6#        | CND4949A                             | Projek Bachelior<br><i>Bachelor Project</i>  | 0+2       |
| LPE2503                              | Penulisan Akademik<br><i>Academic Writing</i>  | 3+0       | CEL2105/CEL2106/CEL2107              |  |           |
| <b>JUMLAH/ TOTAL</b>                 |  | <b>21</b> | <b>JUMLAH/ TOTAL</b>                 |  | <b>14</b> |

| TAHUN 4/ 4 <sup>TH</sup> YEAR        |  |           |                                      |  |           |
|--------------------------------------|--|-----------|--------------------------------------|--|-----------|
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |           | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                             | KURSUS/COURSE  | Kr        | KOD/CODE                             | KURSUS/ COURSE                                 | Kr        |
| CND4949B                             | Projek Bacelor<br><i>Bachelor Project</i>                | 0+4       | CND4901                              | Latihan Industri<br><i>Industrial Training</i> | 0+12      |
| CND4401                              | Pengkomputeran Awan<br><i>Cloud Computing</i>            | 3+0       |                                      |  |           |
| SSW3200                              | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>  | 2+1       |                                      |  |           |
| SSW4202                              | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i> | 3+0       |                                      |  |           |
| CEL2105/CEL2106/CEL2107              |  |           |                                      |  |           |
| <b>JUMLAH/ TOTAL</b>                 |  | <b>13</b> | <b>JUMLAH/ TOTAL</b>                 |  | <b>12</b> |

**Nota/Note:**

- \*Pelajar tempatan/*Local student*, \*\*Pelajar antarabangsa/*International student*
- #Pelajar perlu mengambil 12 kredit kursus Elektif Bebas bagi keperluan bergraduasi/ # *Student has to take 12 credits Free Electives courses for graduation requirements.*
- LPE2302 tidak dikira dalam kredit bergraduasi/*LPE2302 not counted in graduation credits*

**SKEMA PENGAJIAN/STUDY SCHEME**  
**BACELOR SAINS KOMPUTER (RANGKAIAN KOMPUTER) DENGAN KEPUJIAN/**  
**BACHELOR OF COMPUTER SCIENCE (COMPUTER NETWORK) WITH HONOURS (MUET Band 3.0 - 4.5)**

| TAHUN 1/ 1 <sup>ST</sup> YEAR        |  |     |                                      |  |     |
|--------------------------------------|--|-----|--------------------------------------|--|-----|
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |     | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |     |
| KOD/CODE                             | KURSUS/ COURSE   | Kr  | KOD/CODE                             | KURSUS/ COURSE   | Kr  |
| SKP2101*                             | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>   | 3+0 | SKP3122*                             | Penghayatan Etika dan Peradaban<br><i>Internalization of Ethics and Civilization</i>   | 2+0 |
| FEM2401**                            | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                                     | 2+0 | LPM2100**                            | Bahasa Melayu Komunikasi<br><i>Malay Language Communication</i>                        | 2+0 |
| PRT2009                              | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>   | 1+1 | CCS3200                              | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>     | 3+0 |
| SKP3112*                             | Falsafah dan Isu Semasa<br><i>Philosophy and Current Issues</i>  | 2+0 | CCS3101                              | Pengaturcaraan Berorientasikan Objek<br><i>Object-Oriented Programming</i>             | 2+1 |
| SKP3113**                            | Falsafah dan Isu Semasa Masyarakat Sipil<br><i>Philosophy and Current Issues in Civil Society</i>            | 3+0 | CND3101                              | Pengaturcaraan Python<br><i>Python Programming</i>                                     | 2+1 |
| atau/ or<br>SKP3123**                | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3+0 |                                      |  |     |
| FEM2313                              | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>   | 1+0 | CND3200                              | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>         | 3+0 |
| CCS3100                              | Penyelesaian Masalah dan Konsep<br>Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i>         | 2+1 | LPE2403                              | Interaksi dan Pembentangan<br>Akademik<br><i>Academic Interaction and Presentation</i> | 3+0 |
| CCS3003                              | Struktur Diskret<br><i>Discrete Structures</i>   | 3+0 | QKXxxxx                              | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>  | 0+1 |
| QKXxxxx                              | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>  | 0+1 |                                      |  |     |
| LAX (6 mata/points)                  |  |     |                                      |  |     |
| <b>JUMLAH/ TOTAL</b>                 |  |     | <b>JUMLAH/TOTAL</b>                  |  |     |
| <b>15</b>                            |  |     | <b>18</b>                            |  |     |
| TAHUN 2/ 2 <sup>ND</sup> YEAR        |  |     |                                      |  |     |
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |     | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |     |
| KOD/CODE                             | KURSUS/ COURSE   | Kr  | KOD/CODE                             | KURSUS/ COURSE   | Kr  |
| CCS3202                              | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>   | 3+0 | CCS3600                              | Kecerdasan Buatan<br><i>Artificial Intelligence</i>                                    | 2+1 |
| CCS3400                              | Prinsip Pangkalan Data<br><i>Database Principles</i>   | 2+1 | SSW3001                              | Kejuruteraan Perisian<br><i>Software Engineering</i>                                   | 3+0 |
| CCS3300                              | Sistem Pengoperasian<br><i>Operating Systems</i>   | 3+0 | CNS3201                              | Teknologi Antara Rangkaian<br><i>Internetworking Technology</i>                        | 2+1 |
| CND3300                              | Pentadbiran Sistem dan Rangkaian<br><i>System and Network Administration</i>                                 | 2+1 | CCS3402                              | Pembangunan Aplikasi Pangkalan Data<br><i>Database Application Development</i>         | 2+1 |
| XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>  | 3#  | CND4400                              | Sistem Teragih<br><i>Distributed Systems</i>   | 3+0 |
|                                      |  |     | XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>  | 3#  |
| LPE2503                              | Penulisan Akademik<br><i>Academic Writing</i>  | 3+0 | LAX (6 mata/points)                  |  |     |
| <b>JUMLAH/ TOTAL</b>                 |  |     | <b>JUMLAH/ TOTAL</b>                 |  |     |
| <b>18</b>                            |  |     | <b>18</b>                            |  |     |
| TAHUN 3/ 3 <sup>RD</sup> YEAR        |  |     |                                      |  |     |
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |     | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |     |
| KOD/CODE                             | KURSUS/ COURSE   | Kr  | KOD/CODE                             | KURSUS/ COURSE   | Kr  |
| SSW3307                              | Antara Muka Pengguna dan Pengalaman<br>Pengguna<br><i>User Interface and User Experience</i>                 | 3+0 | CND3202                              | Pengkomputeran Teragih dan Selari<br><i>Distributed and Parallel Computing</i>         | 2+1 |
| CND3100                              | Pengaturcaraan Rangkaian<br><i>Network Programming</i>   | 2+1 | CND4300                              | Rangkaian Tentuan Perisian<br><i>Software Defined Network</i>                          | 3+0 |
| CND4200                              | Reka Bentuk dan Pengurusan Rangkaian<br>Perusahaan<br><i>Enterprise Network Design and Management</i>        | 3+0 | CND4201                              | Rangkaian Wayarles dan Bergerak<br><i>Wireless and Mobile Network</i>                  | 3+0 |
| CND4500                              | Keselamatan Rangkaian<br><i>Network Security</i>   | 3+0 | CND3400                              | Aplikasi Mudah Alih<br><i>Mobile Application</i>                                       | 2+1 |
| XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>  | 6#  | CND4949A                             | Projek Bachelo<br><i>Bachelor Project</i>  | 0+2 |
| CEL2105/CEL2106/CEL2107              |  |     | CEL2105/CEL2106/CEL2107              |  |     |
| <b>JUMLAH/ TOTAL</b>                 |  |     | <b>JUMLAH/ TOTAL</b>                 |  |     |
| <b>18</b>                            |  |     | <b>14</b>                            |  |     |

| TAHUN 4/ 4 <sup>TH</sup> YEAR        |  |           |                                      |  |           |
|--------------------------------------|--|-----------|--------------------------------------|--|-----------|
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |           | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                             | KURSUS/COURSE  | Kr        | KOD/CODE                             | KURSUS/ COURSE                                 | Kr        |
| CND4949B                             | Projek Bachelor<br><i>Bachelor Project</i>               | 0+4       | CND4901                              | Latihan Industri<br><i>Industrial Training</i> | 0+12      |
| CND4401                              | Pengkomputeran Awan<br><i>Cloud Computing</i>            | 3+0       |                                      |  |           |
| SSW3200                              | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>  | 2+1       |                                      |  |           |
| SSW4202                              | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i> | 3+0       |                                      |  |           |
| LAX (12 mata/points)                 |  |           |                                      |  |           |
| <b>JUMLAH/ TOTAL</b>                 |  | <b>13</b> | <b>JUMLAH/ TOTAL</b>                 |  | <b>12</b> |

**Nota/Note:**

- \*Pelajar tempatan/*Local student*, \*\*Pelajar antarabangsa/*International student*
- #Pelajar perlu mengambil 12 kredit kursus Elektif Bebas bagi keperluan bergraduasi/ # *Student has to take 12 credits Free Electives courses for graduation requirements.*




**SKEMA PENGAJIAN/STUDY SCHEME**  
**BACELOR SAINS KOMPUTER (RANGKAIAN KOMPUTER) DENGAN KEPUJIAN/**  
**BACHELOR OF COMPUTER SCIENCE (COMPUTER NETWORK) WITH HONOURS (MUET Band 5.0 - 5+)**

| TAHUN 1/ 1 <sup>ST</sup> YEAR                   |  |           |                                      |  |           |
|---|--|-----------|--------------------------------------|--|-----------|
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER            |  |           | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE  | KURSUS/ COURSE   | Kr        | KOD/CODE                             | KURSUS/ COURSE   | Kr        |
| SKP2101*  | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>   | 3+0       | SKP3122*                             | Penghayatan Etika dan Peradaban<br><i>Internalization of Ethics and Civilization</i> | 2+0       |
| FEM2401**                                       | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                                     | 2+0       | LPM2100**                            | Bahasa Melayu Komunikasi<br><i>Malay Language Communication</i>                      | 2+0       |
| PRT2009   | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>   | 1+1       | CCS3200                              | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>   | 3+0       |
| SKP3112*  | Falsafah dan Isu Semasa<br><i>Philosophy and Current Issues</i>  | 2+0       | CCS3101                              | Pengaturcaraan Berorientasikan Objek<br><i>Object-Oriented Programming</i>           | 2+1       |
| SKP3113**                                       | Falsafah dan Isu Semasa Masyarakat Sipil<br><i>Philosophy and Current Issues in Civil Society</i>            | 3+0       | CND3101                              | Pengaturcaraan Python<br><i>Python Programming</i>                                   | 2+1       |
| atau/ or<br>SKP3123**                           | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3+0       |                                      |  |           |
| FEM2313   | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>   | 1+0       | CND3200                              | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>       | 3+0       |
| CCS3100   | Penyelesaian Masalah dan Konsep<br>Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i>         | 2+1       | QKXxxxx                              | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>  | 0+1       |
| CCS3003   | Struktur Diskret<br><i>Discrete Structures</i>   | 3+0       | CEL2103/CEL2104                      |  |           |
| QKXxxxx   | <b>Ko-kurikulum</b><br><b>Co-curriculum</b>  | 0+1       |                                      |  |           |
| LAX (6 mata/points)                             |  |           |                                      |  |           |
| <b>JUMLAH/ TOTAL</b>                            |  | <b>15</b> | <b>JUMLAH/TOTAL</b>                  |  | <b>15</b> |
| TAHUN 2/ 2 <sup>ND</sup> YEAR                   |  |           |                                      |  |           |
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER            |  |           | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE  | KURSUS/ COURSE   | Kr        | KOD/CODE                             | KURSUS/ COURSE   | Kr        |
| CCS3202   | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>   | 3+0       | CCS3600                              | Kecerdasan Buatan<br><i>Artificial Intelligence</i>                                  | 2+1       |
| CCS3400   | Prinsip Pangkalan Data<br><i>Database Principles</i>   | 2+1       | SSW3001                              | Kejuruteraan Perisian<br><i>Software Engineering</i>                                 | 3+0       |
| CCS3300   | Sistem Pengoperasian<br><i>Operating Systems</i>   | 3+0       | CNS3201                              | Teknologi Antara Rangkaian<br><i>Internetworking Technology</i>                      | 2+1       |
| CND3300   | Pentadbiran Sistem dan Rangkaian<br><i>System and Network Administration</i>                                 | 2+1       | CCS3402                              | Pembangunan Aplikasi Pangkalan Data<br><i>Database Application Development</i>       | 2+1       |
| XXXxxxx   | <b>Elektif Bebas</b><br><b>Free Electives</b>  | 3#        | CND4400                              | Sistem Teragih<br><i>Distributed Systems</i>   | 3+0       |
|   |  |           | XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>  | 3#        |
| LPE2504   | Kemahiran Penulisan Kreatif<br><i>Creative Writing Skills</i>  | 3+0       | LAX (6 mata/points)                  |  |           |
| <b>JUMLAH/ TOTAL</b>                            |  | <b>18</b> | <b>JUMLAH/ TOTAL</b>                 |  | <b>18</b> |
| TAHUN 3/ 3 <sup>RD</sup> YEAR                   |  |           |                                      |  |           |
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER            |  |           | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE  | KURSUS/ COURSE   | Kr        | KOD/CODE                             | KURSUS/ COURSE   | Kr        |
| SSW3307   | Antara Muka Pengguna dan Pengalaman<br>Pengguna<br><i>User Interface and User Experience</i>                 | 3+0       | CND3202                              | Pengkomputeran Teragih dan Selari<br><i>Distributed and Parallel Computing</i>       | 2+1       |
| CND3100   | Pengaturcaraan Rangkaian<br><i>Network Programming</i>   | 2+1       | CND4300                              | Rangkaian Tentuan Perisian<br><i>Software Defined Network</i>                        | 3+0       |
| CND4200   | Reka Bentuk dan Pengurusan Rangkaian<br>Perusahaan<br><i>Enterprise Network Design and Management</i>        | 3+0       | CND4201                              | Rangkaian Wayarles dan Bergerak<br><i>Wireless and Mobile Network</i>                | 3+0       |
| CND4500   | Keselamatan Rangkaian<br><i>Network Security</i>   | 3+0       | CND3400                              | Aplikasi Mudah Alih<br><i>Mobile Application</i>                                     | 2+1       |
| XXXxxxx   | <b>Elektif Bebas</b><br><b>Free Electives</b>  | 6#        | CND4949A                             | Projek Bachelior<br><i>Bachelor Project</i>  | 0+2       |
| LPE2303 / Bahasa Global/ <i>Global Language</i> |  | 3+0       | LAX (6 mata/points)                  |  |           |
| <b>JUMLAH/ TOTAL</b>                            |  | <b>21</b> | <b>JUMLAH/ TOTAL</b>                 |  | <b>14</b> |

| TAHUN 4/ 4 <sup>TH</sup> YEAR        |  |           |                                      |  |           |
|--------------------------------------|--|-----------|--------------------------------------|--|-----------|
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |           | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                             | KURSUS/COURSE  | Kr        | KOD/CODE                             | KURSUS/ COURSE                                 | Kr        |
| CND4949B                             | Projek Bachelor<br><i>Bachelor Project</i>               | 0+4       | CND4901                              | Latihan Industri<br><i>Industrial Training</i> | 0+12      |
| CND4401                              | Pengkomputeran Awan<br><i>Cloud Computing</i>            | 3+0       |                                      |  |           |
| SSW3200                              | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>  | 2+1       |                                      |  |           |
| SSW4202                              | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i> | 3+0       |                                      |  |           |
| LAX (6 mata/points)                  |  |           |                                      |  |           |
| <b>JUMLAH/ TOTAL</b>                 |  | <b>13</b> | <b>JUMLAH/ TOTAL</b>                 |  | <b>12</b> |

**Nota/Note:**

- \*Pelajar tempatan/*Local student*, \*\*Pelajar antarabangsa/*International student*
- #Pelajar perlu mengambil 12 kredit kursus Elektif Bebas bagi keperluan bergraduasi/ # *Student has to take 12 credits Free Electives courses for graduation requirements.*



Bachelor Kejuruteraan Perisian  
dengan Kepujian  
*Bachelor of Software Engineering  
with Honours*

## STRUKTUR KURIKULUM | CURRICULUM STRUCTURE

|  |  |
|--|--|
| <b>Nama Program</b><br><i>Program Name</i>                         | : Bachelo Kejuruteraan Perisian dengan Kepujian/<br><i>Bachelor of Software Engineering with Honours</i>   |
| <b>Jumlah Kredit Bergraduat</b><br><i>Total Credit to Graduate</i> | : 126 Jam Kredit/ <i>Credit Hours</i>  |
| <b>Tempoh Pengajian</b><br><i>Length of Study</i>                  | : 8 Semester/ <i>Semesters</i> (4 Tahun/ <i>Years</i> )  |
| <b>Matlamat Program</b><br><i>Program Goals</i>                    | : <ol style="list-style-type: none"> <li>Menghasilkan profesional kejuruteraan perisian yang berupaya menyediakan penyelesaian pengkomputeran bagi masalah bukan-rutin berdasarkan pengetahuan dan kemahiran teknikal bersesuaian dalam bidang Kejuruteraan Perisian mengikut keperluan industri.<br/><i>To produce software engineering professionals who are able to provide computing solutions for non-routine problems based on appropriate knowledge and technical skills in the field of software engineering according to the industry requirements.</i></li> <li>Menghasilkan profesional kejuruteraan perisian yang berkebolehan memimpin serta mampu berkomunikasi secara efektif.<br/><i>To produce software engineering professionals who are able to lead as well as communicate effectively.</i></li> <li>Menghasilkan profesional kejuruteraan perisian yang mempunyai minda keusahawanan dan komited dalam penerokaan ilmu sepanjang hayat bagi pemajuan kerjaya.<br/><i>To produce software engineering professionals who have an entrepreneurial mindset and committed in the exploration of lifelong learning for career progression.</i></li> <li>Menghasilkan profesional kejuruteraan perisian yang mengamalkan sikap beretika dan berintegriti dalam pembangunan diri dan kerjaya.<br/><i>To produce software engineering professionals who uphold ethics and integrity in personal and career development.</i></li> </ol> |

## RINGKASAN HASIL PEMBELAJARAN PROGRAM | SUMMARY OF PROGRAM LEARNING OUTCOMES

| PROGRAM   | Hasil Pembelajaran Program   |  |  |   |  |   |  |   |  |  |   |
|---|--|--|--|---|--|---|--|---|--|--|---|
|   | Menganalisis pengetahuan, konsep fakta, prinsip dan teori yang berkaitan dengan Kejuruteraan Perisian. | Membina penyelesaian pengkomputeran menggunakan prinsip dan teori Kejuruteraan Perisian dalam pembangunan perisian bagi masalah bukan-rutin. | Mengaplikasi metodologi dan teknik yang sesuai untuk penyelesaian pengkomputeran merangkumi menganalisis, memodelkan, merancang, menguji dan menyeenggara perisian berskala besar. | Mempamerkan komunikasi berkesan dengan pelbagai pihak berkepentingan. | Menunjukkan interaksi berkesan dengan pelbagai pihak berkepentingan. | Menggunakan kemahiran digital untuk menyelesaikan masalah dalam bidang Kejuruteraan Perisian. | Menggunakan kemahiran numerasi untuk menyelesaikan masalah dalam bidang Kejuruteraan Perisian. | Menunjukkan kepimpinan, kerja berpasukan, akauntabiliti dan tanggungjawab dalam menyampaikan penyelesaian yang berkaitan dengan bidang Kejuruteraan Perisian. | Mempamerkan keupayaan untuk melanjutkan pengetahuan yang relevan melalui pembelajaran sepanjang hayat. | Menerapkan minda keusahawanan dalam memberikan penyelesaian. | Menegakkan amalan profesional dan etika dalam persekitaran kerja. |
|   | CPSE 3-1   | CPSE 3-2   | CPSE 3-3   | CPSE 3-4  | CPSE 3-5   | CPSE 3-6  | CPSE 3-7   | CPSE 3-8  | CPSE 3-9   | CPSE 3-10  | CPSE 3-11   |
|   | PO1  | PO3  | PO2  | PO5   | PO4  | PO7   | PO10   | PO9   | PO8  | PO8  | PO6   |
|   | C  | CTPS   | P  | TS  | CS   | DS  | NS   | LS  | LL   | KK   | EM  |
| <b>Bachelor Kejuruteraan Perisian dengan Kepujian (Bachelor of Software Engineering with Honours)</b> | <b>39</b>  | <b>17</b>  | <b>27</b>  | <b>10</b>   | <b>8</b>   | <b>16</b>   | <b>5</b>   | <b>5</b>  | <b>7</b>   | <b>4</b>   | <b>9</b>  |

## 1. KURSUS MPU DAN UNIVERSITI | MPU AND UNIVERSITY COURSES (21 Kredit/Credits)

| KOD KURSUS<br>COURSE<br>CODE | NAMA KURSUS<br>COURSE NAME   | Kr | K | A | PRASYARAT<br>PREREQUISITE      |
|------------------------------|--|----|---|---|--------------------------------|
| SKP3112*                     | Falsafah dan Isu Semasa<br><i>Philosophy and Current Issues</i>  | 2  | 2 | 0 | Tiada/None                     |
| SKP3113**                    | Falsafah dan Isu Semasa Masyarakat Sipil<br><i>Philosophy and Current Issues in Civil Society</i>            | 3  | 3 | 0 | Tiada/None                     |
| Atau/Or                      | Atau/Or  |    |   |   |                                |
| SKP3123**                    | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3  | 3 | 0 | Tiada/None                     |
| SKP3122*                     | Penghayatan Etika dan Peradaban<br><i>Internalization of Ethics and Civilization</i>                         | 2  | 2 | 0 | Tiada/None                     |
| LPM2100**                    | Bahasa Melayu Komunikasi<br><i>Malay Language Communication</i>  | 2  | 2 | 0 | Tiada/None                     |
| SSW3200                      | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>  | 3  | 2 | 1 | Tiada/None                     |
| SKP2101*                     | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>   | 3  | 3 | 0 | Tiada/None                     |
| FEM2401**                    | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                                     | 2  | 2 | 0 |                                |
| FEM2313                      | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>   | 1  | 1 | 0 | Tiada/None                     |
| QKXxxxx                      | Ko-kurikulum<br><i>Co-curriculum</i>   | 1  | 0 | 1 |                                |
| QKXxxxx                      | Ko-kurikulum<br><i>Co-curriculum</i>   | 1  | 0 | 1 |                                |
| LPE2403                      | Interaksi dan Pembentangan Akademik<br><i>Academic Interaction and Presentation</i>                          | 3  | 3 | 0 | LPE2302/MUET<br>Band 3.0 – 4.5 |
| LPE2503                      | Penulisan Akademik<br><i>Academic Writing</i>  | 3  | 3 | 0 | LPE2403                        |
| PRT2009                      | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>   | 2  | 1 | 1 | Tiada/None                     |

### Nota/Note:

- Kr = Jam Kredit/Credit Hour, K = Kuliah/Lecture, A = Amali/Laboratory, T = Tutorial
- \*Pelajar Tempatan/Local Students \*\*Pelajar Antarabangsa/International Students
- Pelajar diwajibkan memilih **2 kredit** daripada **kursus ko-kurikulum** yang ditawarkan oleh Universiti.  
*It is compulsory for students to take 2 credits of co-curriculum courses offered by the University.*
- Pelajar perlu melengkapkan pakej keperluan Bahasa Inggeris seperti jadual di bawah (Butiran lanjut mengenai CEL dan LAX sila rujuk di muka surat 4 buku panduan ini).  
*Students need to complete the English package as in the table below (For more details on CEL and LAX please refer to page 4 of this book).*

| CEFR           | MUET                       |                          | IELTS         | TOEFL<br>iBT  | CIEP           | Pearson<br>Test of<br>English<br>(PTE)<br>Academic | Cambridge<br>English | Keperluan Bergraduat  <br>Graduation Requirement   |
|----------------|----------------------------|--------------------------|---------------|---------------|----------------|--|----------------------|--|
| Tahap<br>Level | Band<br>(Previous<br>ver.) | Band<br>(Latest<br>ver.) | Skor<br>Score | Skor<br>Score | Tahap<br>Level | Skor<br>Score                                      | Skor<br>Score        |  |
| C1 – C2        | 5 - 6                      | 5.0 - 5+                 | 7.0 - 9.0     | 95 - 120      | N/A            | 76 - 90  | 180 - 230            | 2 LPE + 1 CEL + 24<br>mata/point LAX<br><b>atau / or</b><br>1 LPE + 1 CEL + 24<br>mata/point LAX<br>+ 1 Bahasa Global/Global<br>Language |
| B1 – B2        | 3 - 4                      | 3.0 - 4.5                | 4.0 - 6.5     | 42 - 94       | 104 - 109      | 43 - 75  | 140 - 179            | 2 LPE + 2 CEL +<br>24 mata/point LAX   |
| A1 – A2        | 1 - 2                      | 1.0 - 2.5                | 2.5 - 3.5     | N/A           | 101 - 103      | 24 - 42  | 100 - 139            | 3 LPE + 3 CEL +<br>24 mata/point LAX   |

## 2. MODUL TERAS KOMPUTERAN | CORE COMPUTING MODULES (18 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME  | Kr | K | A | PRASYARAT<br>PREREQUISITE |
|---------------------------|---|----|---|---|---------------------------|
| CCS3100                   | Penyelesaian Masalah dan Konsep Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i> | 3  | 2 | 1 | Tiada/None                |
| CCS3200                   | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>                | 3  | 3 | 0 | CCS3100                   |
| CCS3202                   | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>                              | 3  | 3 | 0 | CCS3101                   |
| CCS3300                   | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3  | 3 | 0 | CCS3200                   |
| CCS3400                   | Prinsip Pangkalan Data<br><i>Database Principles</i>  | 3  | 2 | 1 | CCS3101                   |
| CND3200                   | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>                    | 3  | 3 | 0 | Tiada/None                |

## 3. MODUL TERAS DISIPLIN | CORE DISCIPLINARY MODULES (36 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME  | Kr | K | A | PRASYARAT<br>PREREQUISITE  |
|---------------------------|---|----|---|---|----------------------------|
| CCS3003                   | Struktur Diskret<br><i>Discrete Structures</i>  | 3  | 3 | 0 | Tiada/None                 |
| CCS3101                   | Pengaturcaraan Berorientasikan Objek<br><i>Object-oriented Programming</i>                | 3  | 2 | 1 | CCS3100                    |
| SSW3201                   | Statistik Bagi Sains Komputer<br><i>Statistics for Computer Science</i>                   | 3  | 3 | 0 | Tiada/ None                |
| SSW3301                   | Kejuruteraan Keperluan Perisian<br><i>Software Requirements Engineering</i>               | 3  | 3 | 0 | CCS3100                    |
| SSW3302                   | Seni Bina dan Reka Bentuk Perisian<br><i>Software Architecture and Design</i>             | 3  | 3 | 0 | SSW3301                    |
| SSW3305                   | Pengujian Perisian<br><i>Software Testing</i>   | 3  | 3 | 0 | SSW3302                    |
| SSW3307                   | Pengalaman Pengguna dan Antara Muka Pengguna<br><i>User Experience and User Interface</i> | 3  | 3 | 0 | SSW3302 atau/or<br>SSW3001 |
| SSW3310                   | Pengurusan Projek Perisian<br><i>Software Project Management</i>                          | 3  | 3 | 0 | SSW3301/<br>SSW3001        |
| SSW3400                   | Projek Kejuruteraan Perisian Berpasukan<br><i>Software Engineering Team Project</i>       | 3  | 2 | 1 | SSW3310                    |
| SSW4201                   | Metodologi Pembangunan Perisian/<br><i>Software Development Methodology</i>               | 3  | 3 | 0 | SSW3301                    |
| SSW4202                   | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i>                                  | 3  | 3 | 0 | CCS3100                    |
| SSW4351                   | Penyelenggaraan dan Evolusi Perisian<br><i>Software Maintenance and Evolution</i>         | 3  | 3 | 0 | SSW3301                    |
| SSW4356                   | Pembangunan Perisian Selamat<br><i>Secure Software Development</i>                        | 3  | 3 | 0 | CCS3300                    |

## 4. PROJEK | PROJECT (6 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME                  | Kr | K | A | PRASYARAT<br>PREREQUISITE  |
|---------------------------|---|----|---|---|--|
| SSW4949                   | Projek Bachelior<br><i>Bachelor Project</i> | 6  | 0 | 6 | Dengan Kebenaran<br>Jabatan<br><i>With Department<br/>Permission</i> |

## 5. LATIHAN INDUSTRI | INDUSTRIAL TRAINING (12 Kredit/Credits)

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME                     | Kr | K | A  | PRASYARAT<br>PREREQUISITE  |
|---------------------------|--|----|---|----|--|
| SSW4901                   | Latihan Industri<br><i>Industrial Training</i> | 12 | 0 | 12 | Dengan Kebenaran<br>Jabatan<br><i>With Department<br/>Permission</i> |

**6. ELEKTIF BIDANG | FIELD ELECTIVES (18 Kredit/Credits)**

| KOD KURSUS<br>COURSE CODE | NAMA KURSUS<br>COURSE NAME  | Kr | K | A | PRASYARAT<br>PREREQUISITE  |
|---------------------------|---|----|---|---|----------------------------|
| SSW3308                   | Pembangunan Aplikasi Web<br><i>Web Application Development</i>                                      | 3  | 2 | 1 | Tiada                      |
| SSW3401                   | Pembangunan Aplikasi Mudah Alih<br><i>Mobile Application Development</i>                            | 3  | 2 | 1 | CCS3101                    |
| SSW3402                   | Pembangunan Sistem Perusahaan<br><i>Enterprise Systems Development</i>                              | 3  | 2 | 1 | SSW3308                    |
| SSW4303                   | Kaedah Formal dalam Pembangunan Perisian<br><i>Formal Methods in Software Development</i>           | 3  | 3 | 0 | SSW3301 atau<br>SSW3001    |
| SSW4353                   | Pembangunan Perisian Berasaskan Komponen<br><i>Component-Based Software Development</i>             | 3  | 3 | 0 | SSW3302                    |
| SSW4355                   | Kejuruteraan Perisian Masa Nyata<br><i>Real-Time Software Engineering</i>                           | 3  | 3 | 0 | SSW3302                    |
| SSW4357                   | Pembangunan Aplikasi dalam Pengkomputeran Awan<br><i>Application Development in Cloud Computing</i> | 3  | 3 | 0 | CCS3101 dan/and<br>CND3200 |
| SSW4401                   | Perdagangan Elektronik<br><i>Electronic Commerce</i>  | 3  | 3 | 0 | SSW3308                    |
| CCS3402                   | Pembangunan Aplikasi Pangkalan Data<br><i>Database Application Development</i>                      | 3  | 2 | 1 | CCS3400                    |
| CCS4400                   | Sistem Pangkalan Data Lanjutan<br><i>Advanced Database Systems</i>                                  | 3  | 3 | 0 | CCS3400                    |
| CCS4402                   | Pentadbiran Pangkalan Data<br><i>Database Administration</i>  | 3  | 3 | 0 | CCS4400                    |
| CCS4404                   | Analitik Bisnes<br><i>Business Analytics</i>  | 3  | 3 | 0 | CCS3400                    |
| CCS4406                   | Analitik Data Raya<br><i>Big Data Analytics</i>   | 3  | 3 | 0 | CCS3400                    |
| CCS4500                   | Keselamatan Komputer<br><i>Computer Security</i>  | 3  | 3 | 0 | CCS3300                    |
| CCS4502                   | Kriptografi<br><i>Cryptography</i>  | 3  | 3 | 0 | CCS3202                    |
| CCS4504                   | Forensik Komputer<br><i>Computer Forensics</i>  | 3  | 3 | 0 | CCS3300                    |
| CCS4506                   | Keselamatan Pangkalan Data<br><i>Database Security</i>  | 3  | 3 | 0 | CCS3402                    |
| CCS3600                   | Kecerdasan Buatan<br><i>Artificial Intelligence</i>   | 3  | 3 | 0 | CCS3202                    |
| CCS4600                   | Perlombongan Data<br><i>Data Mining</i>   | 3  | 3 | 0 | CCS3600                    |
| CCS4602                   | Pembelajaran Mesin<br><i>Machine Learning</i>   | 3  | 3 | 0 | CCS3600                    |
| CCS4604                   | Sistem Berasaskan Pengetahuan<br><i>Knowledge Based System</i>                                      | 3  | 3 | 0 | CCS3600                    |
| CCS3700                   | Pengaturcaraan Sistem Terbenam<br><i>Embedded Systems Programming</i>                               | 3  | 2 | 1 | CCS3300                    |
| CCS4700                   | Pembangunan Sistem Terbenam<br><i>Embedded Systems Development</i>                                  | 3  | 3 | 0 | CCS3700                    |
| CCS4702                   | Pembangunan Sistem Robotik<br><i>Robotic System Development</i>                                     | 3  | 3 | 0 | CCS3202                    |
| CCS4704                   | Internet Benda dan Aplikasi<br><i>Internet of Things and Applications</i>                           | 3  | 3 | 0 | CCS3700                    |
| CCS3104                   | Pengaturcaraan Lanjutan<br><i>Advanced Programming</i>  | 3  | 2 | 1 | CCS3101                    |
| CCS4202                   | Reka Bentuk dan Analisis Algoritma<br><i>Design and Analysis of Algorithms</i>                      | 3  | 3 | 0 | CCS3202                    |
| CND3101                   | Pengaturcaraan Python<br><i>Python Programming</i>  | 3  | 2 | 1 | CCS3100                    |
| CND3102                   | Pengaturcaraan C++<br><i>C++ Programming</i>  | 3  | 2 | 1 | CCS3101                    |

**7. MODUL BEBAS | FREE MODULES (12 Kredit/Credits)**

| <b>KOD KURSUS<br/>CODE</b> | <b>COURSE</b> | <b>NAMA KURSUS<br/>COURSE NAME</b> | <b>Kr</b> | <b>K</b> | <b>A</b> | <b>PRASYARAT<br/>PREREQUISITE</b> |
|----------------------------|---------------|------------------------------------|-----------|----------|----------|-----------------------------------|
|                            |               |                                    | 12        |          |          |                                   |

Pelajar dikehendaki memilih sekurang-kurangnya 12 kredit daripada mana-mana kursus dalam atau luar bidang pengkomputeran dari mana-mana universiti dengan kebenaran Ketua Jabatan.  
Students are required to choose at least 12 credits from any course inside or outside the field of computing from any university with the permission of the Head of Department.



**SKEMA PENGAJIAN/STUDY SCHEME**  
**BACELOR KEJURUTERAAN PERISIAN DENGAN KEPUJIAN/**  
**BACHELOR OF SOFTWARE ENGINEERING WITH HONOURS (MUET Band 2.0 - 2.5)**

| TAHUN 1/ 1 <sup>ST</sup> YEAR        |  |                |                                      |   |                |
|--------------------------------------|--|----------------|--------------------------------------|---|----------------|
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |                | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |   |                |
| KOD/CODE                             | KURSUS/ COURSE   | Kr             | KOD/CODE                             | KURSUS/ COURSE  | Kr             |
| CSC3100                              | Penyelesaian Masalah dan Konsep Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i>            | 2+1            | CSC3101                              | Pengaturcaraan Berorientasikan Objek<br><i>Object-Oriented Programming</i>                | 2+1            |
| CSC3003                              | Struktur Diskret<br><i>Discrete Structures</i>   | 3+0            | CSC3200                              | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>        | 3+0            |
| SKP2101*                             | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>   | 3+0            | SSW3201                              | Statistik bagi Sains Komputer<br><i>Statistics for Computer Science</i>                   | 3+0            |
| FEM2401**                            | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                                     | 2+0            |                                      |   |                |
| SKP3112*                             | Falsafah dan Isu Semasa<br><i>Philosophy and Current Issues</i>  | 2+0            | SWW3301                              | Kejuruteraan Keperluan Perisian<br><i>Software Requirements Engineering</i>               | 3+0            |
| SKP3113**                            | Falsafah dan Isu Semasa Masyarakat Sipil<br><i>Philosophy and Current Issues in Civil Society</i>            | 3+0            |                                      |   |                |
| atau/or<br>SKP3123**                 | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3+0            |                                      |   |                |
| SKP3122*                             | Penghayatan Etika dan Peradaban<br><i>Internalization of Ethics and Civilization</i>                         | 2+0            | FEM2313                              | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>                          | 1+0            |
| LPM2100**                            | Bahasa Melayu Komunikasi<br><i>Malay Language Communication</i>  | 2+0            |                                      |   |                |
| PRT2009                              | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>   | 1+1            | CEL 2102                             | <i>Effective Listening and Speaking</i>   |                |
| QKXxxxx                              | Ko-kurikulum<br><i>Co-curriculum</i>   | 0+1            | QKXxxxx                              | Ko-kurikulum<br><i>Co-curriculum</i>  | 0+1            |
| LAX (12 mata/points)                 |  |                | LAX (6 mata/points)                  |   |                |
| <b>JUMLAH/TOTAL</b>                  |  |                | <b>JUMLAH/TOTAL</b>                  |   |                |
| <b>16</b>                            |  |                | <b>14</b>                            |   |                |
| TAHUN 2/ 2 <sup>ND</sup> YEAR        |  |                |                                      |   |                |
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |                | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |   |                |
| KOD/CODE                             | KURSUS/ COURSE   | Kr             | KOD/CODE                             | KURSUS/ COURSE  | Kr             |
| CSC3202                              | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>   | 3+0            | CSC3300                              | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3+0            |
| CSC3400                              | Prinsip Pangkalan Data<br><i>Database Principles</i>   | 2+1            | SSW3305                              | Pengujian Perisian<br><i>Software Testing</i>   | 3+0            |
| SSW3302                              | Seni Bina dan Reka Bentuk Perisian<br><i>Software Architecture and Design</i>                                | 3+0            | SSW3307                              | Pengalaman Pengguna dan Antara Muka Pengguna<br><i>User Experience and User Interface</i> | 3+0            |
| CND3200                              | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>                               | 3+0            | SSW4201                              | Metodologi Pembangunan Perisian<br><i>Software Development Methodology</i>                | 3+0            |
| LPE2302                              | Pembacaan bagi Tujuan Akademik<br><i>Reading for Academic Purposes</i>                                       | 3+0            | SSWxxxx                              | <b>Elektif Bidang</b><br><b>Field Electives</b>   | 6 <sup>^</sup> |
|                                      |  |                | LPE2403                              | Interaksi dan Pembentangan Akademik<br><i>Academic Interaction and Presentation</i>       | 3+0            |
| <b>JUMLAH/TOTAL</b>                  |  |                | <b>JUMLAH/TOTAL</b>                  |   |                |
| <b>15</b>                            |  |                | <b>21</b>                            |   |                |
| TAHUN 3/ 3 <sup>RD</sup> YEAR        |  |                |                                      |   |                |
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |                | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |   |                |
| KOD/CODE                             | KURSUS/ COURSE   | Kr             | KOD/CODE                             | KURSUS/ COURSE  | Kr             |
| SSW3200                              | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>  | 2+1            | SSW4356                              | Pembangunan Perisian Selamat<br><i>Secure Software Development</i>                        | 3+0            |
| SSW3310                              | Pengurusan Projek Perisian<br><i>Software Project Management</i>   | 3+0            | SSW3400                              | Projek Kejuruteraan Perisian Berpasukan<br><i>Software Engineering Team Project</i>       | 2+1            |
| SSW4351                              | Penyelenggaraan dan Evolusi Perisian<br><i>Software Maintenance and Evolution</i>                            | 3+0            | SSW4949A                             | Projek Bachelo<br><i>Bachelor Project</i>   | 0+2            |
| SSWxxxx                              | <b>Elektif Bidang</b><br><b>Field Electives</b>  | 6 <sup>^</sup> | SSWxxxx                              | <b>Elektif Bidang</b><br><b>Field Electives</b>   | 3 <sup>^</sup> |
| XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>  | 3 <sup>#</sup> | XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>   | 6 <sup>#</sup> |
|                                      |  |                | CEL2106/CEL2107                      |   |                |
| <b>JUMLAH/TOTAL</b>                  |  |                | <b>JUMLAH/TOTAL</b>                  |   |                |
| <b>18</b>                            |  |                | <b>17</b>                            |   |                |

| TAHUN 4/ 4 <sup>TH</sup> YEAR        |  |                |                                      |  |           |
|--------------------------------------|--|----------------|--------------------------------------|--|-----------|
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |                | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                             | KURSUS/ COURSE   | Kr             | KOD/CODE                             | KURSUS/ COURSE                                 | Kr        |
| SSW4949B                             | Projek Bachelo<br><i>Bachelor Project</i>                | 0+4            | SSW4901                              | Latihan Industri<br><i>Industrial Training</i> | 0+12      |
| SSW4202                              | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i> | 3+0            |                                      |  |           |
| SSWxxxx                              | <b>Elektif Bidang</b><br><b>Field Electives</b>          | 3 <sup>^</sup> |                                      |  |           |
| XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>            | 3 <sup>#</sup> |                                      |  |           |
| CEL2105                              |  |                |                                      |  |           |
| <b>JUMLAH/TOTAL</b>                  |  | <b>13</b>      | <b>JUMLAH/TOTAL</b>                  |  | <b>12</b> |

**Nota/Note:**

- \*Pelajar tempatan/*Local student*, \*\*Pelajar antarabangsa/*International student*
- ^Pelajar perlu mengambil 18 kredit kursus Elektif Bidang bagi keperluan bergraduati/ *^Student has to take 18 credits Field Electives courses for graduation requirements.*
- #Pelajar perlu mengambil 12 kredit kursus Elektif Bebas bagi keperluan bergraduati/ *# Student has to take 12 credits Free Electives courses for graduation requirements.*

**SKEMA PENGAJIAN/STUDY SCHEME**  
**BACELOR KEJURUTERAAN PERISIAN DENGAN KEPUJIAN/**  
**BACHELOR OF SOFTWARE ENGINEERING WITH HONOURS (MUET Band 3.0 - 4.5)**

| TAHUN 1/ 1 <sup>ST</sup> YEAR        |  |                |                                      |   |                |
|--------------------------------------|--|----------------|--------------------------------------|---|----------------|
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |                | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |   |                |
| KOD/CODE                             | KURSUS/ COURSE   | Kr             | KOD/CODE                             | KURSUS/ COURSE  | Kr             |
| CSC3100                              | Penyelesaian Masalah dan Konsep Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i>            | 2+1            | CSC3101                              | Pengaturcaraan Berorientasikan Objek<br><i>Object-Oriented Programming</i>                | 2+1            |
| CSC3003                              | Struktur Diskret<br><i>Discrete Structures</i>   | 3+0            | CSC3200                              | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>        | 3+0            |
| SKP2101*                             | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>   | 3+0            | SSW3201                              | Statistik bagi Sains Komputer<br><i>Statistics for Computer Science</i>                   | 3+0            |
| FEM2401**                            | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                                     | 2+0            |                                      |   |                |
| SKP3112*                             | Falsafah dan Isu Semasa<br><i>Philosophy and Current Issues</i>  | 2+0            | SWW3301                              | Kejuruteraan Keperluan Perisian<br><i>Software Requirements Engineering</i>               | 3+0            |
| SKP3113**                            | Falsafah dan Isu Semasa Masyarakat Sipil<br><i>Philosophy and Current Issues in Civil Society</i>            | 3+0            |                                      |   |                |
| atau/or<br>SKP3123**                 | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3+0            |                                      |   |                |
| SKP3122*                             | Penghayatan Etika dan Peradaban<br><i>Internalization of Ethics and Civilization</i>                         | 2+0            | FEM2313                              | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>                          | 1+0            |
| LPM2100**                            | Bahasa Melayu Komunikasi<br><i>Malay Language Communication</i>  | 2+0            |                                      |   |                |
| PRT2009                              | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>   | 1+1            | LPE2403                              | Interaksi dan Pembentangan Akademik<br><i>Academic Interaction and Presentation</i>       | 3+0            |
| QKXxxxx                              | Ko-kurikulum<br><i>Co-curriculum</i>   | 0+1            | QKXxxxx                              | Ko-kurikulum<br><i>Co-curriculum</i>  | 0+1            |
| LAX (6 mata/points)                  |  |                |                                      |   |                |
| <b>JUMLAH/TOTAL</b>                  |  |                | <b>JUMLAH/TOTAL</b>                  |   |                |
| <b>16</b>                            |  |                | <b>17</b>                            |   |                |
| TAHUN 2/ 2 <sup>ND</sup> YEAR        |  |                |                                      |   |                |
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |                | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |   |                |
| KOD/CODE                             | KURSUS/ COURSE   | Kr             | KOD/CODE                             | KURSUS/ COURSE  | Kr             |
| CSC3202                              | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>   | 3+0            | CSC3300                              | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3+0            |
| CSC3400                              | Prinsip Pangkalan Data<br><i>Database Principles</i>   | 2+1            | SSW3305                              | Pengujian Perisian<br><i>Software Testing</i>   | 3+0            |
| SSW3302                              | Seni Bina dan Reka Bentuk Perisian<br><i>Software Architecture and Design</i>                                | 3+0            | SSW3307                              | Pengalaman Pengguna dan Antara Muka Pengguna<br><i>User Experience and User Interface</i> | 3+0            |
| CND3200                              | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>                               | 3+0            | SSW4201                              | Metodologi Pembangunan Perisian<br><i>Software Development Methodology</i>                | 3+0            |
| LPE2503                              | Penulisan Akademik<br><i>Academic Writing</i>  | 3+0            | SSWxxxx                              | <b>Elektif Bidang</b><br><b>Field Electives</b>   | 6 <sup>^</sup> |
|                                      |  |                | LAX (6 mata/points)                  |   |                |
| <b>JUMLAH/TOTAL</b>                  |  |                | <b>JUMLAH/TOTAL</b>                  |   |                |
| <b>15</b>                            |  |                | <b>18</b>                            |   |                |
| TAHUN 3/ 3 <sup>RD</sup> YEAR        |  |                |                                      |   |                |
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |                | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |   |                |
| KOD/CODE                             | KURSUS/ COURSE   | Kr             | KOD/CODE                             | KURSUS/ COURSE  | Kr             |
| SSW3200                              | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>  | 2+1            | SSW4356                              | Pembangunan Perisian Selamat<br><i>Secure Software Development</i>                        | 3+0            |
| SSW3310                              | Pengurusan Projek Perisian<br><i>Software Project Management</i>   | 3+0            | SSW3400                              | Projek Kejuruteraan Perisian Berpasukan<br><i>Software Engineering Team Project</i>       | 2+1            |
| SSW4351                              | Penyelenggaraan dan Evolusi Perisian<br><i>Software Maintenance and Evolution</i>                            | 3+0            | SSW4949A                             | Projek Bachelior<br><i>Bachelor Project</i>   | 0+2            |
| SSWxxxx                              | <b>Elektif Bidang</b><br><b>Field Electives</b>  | 6 <sup>^</sup> | SSWxxxx                              | <b>Elektif Bidang</b><br><b>Field Electives</b>   | 3 <sup>^</sup> |
| XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>  | 3 <sup>#</sup> | XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>   | 6 <sup>#</sup> |
| CEL2105                              |  |                | CEL2106/CEL2107                      |   |                |
| <b>JUMLAH/TOTAL</b>                  |  |                | <b>JUMLAH/TOTAL</b>                  |   |                |
| <b>18</b>                            |  |                | <b>17</b>                            |   |                |

| TAHUN 4/ 4 <sup>TH</sup> YEAR        |  |                |                                      |  |           |
|--------------------------------------|--|----------------|--------------------------------------|--|-----------|
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |                | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                             | KURSUS/ COURSE   | Kr             | KOD/CODE                             | KURSUS/ COURSE                                 | Kr        |
| SSW4949B                             | Projek Bachelo<br><i>Bachelor Project</i>                | 0+4            | SSW4901                              | Latihan Industri<br><i>Industrial Training</i> | 0+12      |
| SSW4202                              | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i> | 3+0            |                                      |  |           |
| SSWxxxx                              | <b>Elektif Bidang</b><br><b>Field Electives</b>          | 3 <sup>^</sup> |                                      |  |           |
| XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>            | 3 <sup>#</sup> |                                      |  |           |
| LAX (12 mata/points)                 |  |                |                                      |  |           |
| <b>JUMLAH/TOTAL</b>                  |  | <b>13</b>      | <b>JUMLAH/TOTAL</b>                  |  | <b>12</b> |

**Nota/Note:**

- \*Pelajar tempatan/*Local student*, \*\*Pelajar antarabangsa/*International student*
- ^Pelajar perlu mengambil 18 kredit kursus Elektif Bidang bagi keperluan bergraduati/ *^Student has to take 18 credits Field Electives courses for graduation requirements.*
- #Pelajar perlu mengambil 12 kredit kursus Elektif Bebas bagi keperluan bergraduati/ *# Student has to take 12 credits Free Electives courses for graduation requirements.*

**SKEMA PENGAJIAN/STUDY SCHEME**  
**BACELOR KEJURUTERAAN PERISIAN DENGAN KEPUJIAN/**  
**BACHELOR OF SOFTWARE ENGINEERING WITH HONOURS (MUET Band 5.0 – 5+)**

| TAHUN 1/ 1 <sup>ST</sup> YEAR                   |  |                |                                      |   |                |
|---|--|----------------|--------------------------------------|---|----------------|
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER            |  |                | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |   |                |
| KODI/CODE                                       | KURSUS/ COURSE   | Kr             | KODI/CODE                            | KURSUS/ COURSE  | Kr             |
| CSC3100   | Penyelesaian Masalah dan Konsep Pengaturcaraan<br><i>Problem Solving and Programming Concepts</i>            | 2+1            | CSC3101                              | Pengaturcaraan Berorientasikan Objek<br><i>Object-Oriented Programming</i>                | 2+1            |
| CSC3003   | Struktur Diskret<br><i>Discrete Structures</i>   | 3+0            | CSC3200                              | Organisasi dan Seni Bina Komputer<br><i>Computer Organization and Architecture</i>        | 3+0            |
| SKP2101*  | Kenegaraan Malaysia<br><i>Malaysian Nationhood</i>   | 3+0            | SSW3201                              | Statistik bagi Sains Komputer<br><i>Statistics for Computer Science</i>                   | 3+0            |
| FEM2401**                                       | Politik Malaysia dan Masyarakat<br><i>Malaysian Politics and Society</i>                                     | 2+0            |                                      |   |                |
| SKP3112*  | Falsafah dan Isu Semasa<br><i>Philosophy and Current Issues</i>  | 2+0            | SWW3301                              | Kejuruteraan Keperluan Perisian<br><i>Software Requirements Engineering</i>               | 3+0            |
| SKP3113**                                       | Falsafah dan Isu Semasa Masyarakat Sivik<br><i>Philosophy and Current Issues in Civil Society</i>            | 3+0            |                                      |   |                |
| atau/or<br>SKP3123**                            | Penghayatan Etika dan Peradaban di Malaysia<br><i>Internalization of Ethics and Civilization in Malaysia</i> | 3+0            |                                      |   |                |
| SKP3122*  | Penghayatan Etika dan Peradaban<br><i>Internalization of Ethics and Civilization</i>                         | 2+0            | FEM2313                              | Integriti dan Antirasuah<br><i>Integrity and Anti-corruption</i>                          | 1+0            |
| LPM2100**                                       | Bahasa Melayu Komunikasi<br><i>Malay Language Communication</i>  | 2+0            |                                      |   |                |
| PRT2009   | Pertanian dan Kehidupan<br><i>Agriculture and Life</i>   | 1+1            |                                      |   |                |
| QKXxxxx   | Ko-kurikulum<br><i>Co-curriculum</i>   | 0+1            | QKXxxxx                              | Ko-kurikulum<br><i>Co-curriculum</i>  | 0+1            |
| LAX (6 mata/points)                             |  |                | CEL 2103/CEL2104                     |   |                |
| <b>JUMLAH/TOTAL</b>                             |  |                | <b>JUMLAH/TOTAL</b>                  |   |                |
| <b>16</b>                                       |  |                | <b>14</b>                            |   |                |
| TAHUN 2/ 2 <sup>ND</sup> YEAR                   |  |                |                                      |   |                |
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER            |  |                | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |   |                |
| KODI/CODE                                       | KURSUS/ COURSE   | Kr             | KODI/CODE                            | KURSUS/ COURSE  | Kr             |
| CSC3202   | Struktur Data dan Algoritma<br><i>Data Structures and Algorithms</i>   | 3+0            | CSC3300                              | Sistem Pengoperasian<br><i>Operating Systems</i>  | 3+0            |
| CSC3400   | Prinsip Pangkalan Data<br><i>Database Principles</i>   | 2+1            | SSW3305                              | Pengujian Perisian<br><i>Software Testing</i>   | 3+0            |
| SSW3302   | Seni Bina dan Reka Bentuk Perisian<br><i>Software Architecture and Design</i>                                | 3+0            | SSW3307                              | Pengalaman Pengguna dan Antara Muka Pengguna<br><i>User Experience and User Interface</i> | 3+0            |
| CND3200   | Komunikasi dan Rangkaian Komputer<br><i>Computer Network and Communication</i>                               | 3+0            | SSW4201                              | Metodologi Pembangunan Perisian<br><i>Software Development Methodology</i>                | 3+0            |
| LPE2504   | Kemahiran Penulisan Kreatif<br><i>Creative Writing Skills</i>  | 3+0            | SSWxxxx                              | Elektif Bidang<br><i>Field Electives</i>  | 6 <sup>^</sup> |
|   |  |                | LAX (6 mata/points)                  |   |                |
| <b>JUMLAH/TOTAL</b>                             |  |                | <b>JUMLAH/TOTAL</b>                  |   |                |
| <b>15</b>                                       |  |                | <b>18</b>                            |   |                |
| TAHUN 3/ 3 <sup>RD</sup> YEAR                   |  |                |                                      |   |                |
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER            |  |                | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |   |                |
| KODI/CODE                                       | KURSUS/ COURSE   | Kr             | KODI/CODE                            | KURSUS/ COURSE  | Kr             |
| SSW3200   | Keusahawanan Digital<br><i>Digital Entrepreneurship</i>  | 2+1            | SSW4356                              | Pembangunan Perisian Selamat<br><i>Secure Software Development</i>                        | 3+0            |
| SSW3310   | Pengurusan Projek Perisian<br><i>Software Project Management</i>   | 3+0            | SSW3400                              | Projek Kejuruteraan Perisian Berpasukan<br><i>Software Engineering Team Project</i>       | 2+1            |
| SSW4351   | Penyelenggaraan dan Evolusi Perisian<br><i>Software Maintenance and Evolution</i>                            | 3+0            | SSW4949A                             | Projek Bachelors<br><i>Bachelor Project</i>   | 0+2            |
| SSWxxxx   | Elektif Bidang<br><i>Field Electives</i>   | 6 <sup>^</sup> | SSWxxxx                              | Elektif Bidang<br><i>Field Electives</i>  | 3 <sup>^</sup> |
| XXXxxxx   | Elektif Bebas<br><i>Free Electives</i>   | 3 <sup>#</sup> | XXXxxxx                              | Elektif Bebas<br><i>Free Electives</i>  | 6 <sup>#</sup> |
| LPE2303 / Bahasa Global/ <i>Global Language</i> |  | 3+0            | LAX (6 mata/points)                  |   |                |
| <b>JUMLAH/TOTAL</b>                             |  |                | <b>JUMLAH/TOTAL</b>                  |   |                |
| <b>21</b>                                       |  |                | <b>17</b>                            |   |                |

| TAHUN 4/ 4 <sup>TH</sup> YEAR        |  |                |                                      |  |           |
|--------------------------------------|--|----------------|--------------------------------------|--|-----------|
| SEMESTER 1/ 1 <sup>ST</sup> SEMESTER |  |                | SEMESTER 2/ 2 <sup>ND</sup> SEMESTER |  |           |
| KOD/CODE                             | KURSUS/ COURSE   | Kr             | KOD/CODE                             | KURSUS/ COURSE                                 | Kr        |
| SSW4949B                             | Projek Bachelor<br><i>Bachelor Project</i>               | 0+4            | SSW4901                              | Latihan Industri<br><i>Industrial Training</i> | 0+12      |
| SSW4202                              | Etika dalam Pengkomputeran<br><i>Ethics in Computing</i> | 3+0            |                                      |  |           |
| SSWxxxx                              | <b>Elektif Bidang</b><br><b>Field Electives</b>          | 3 <sup>^</sup> |                                      |  |           |
| XXXxxxx                              | <b>Elektif Bebas</b><br><b>Free Electives</b>            | 3 <sup>#</sup> |                                      |  |           |
| LAX (6 mata/points)                  |  |                |                                      |  |           |
| <b>JUMLAH/TOTAL</b>                  |  | <b>13</b>      | <b>JUMLAH/TOTAL</b>                  |  | <b>12</b> |

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- \*Pelajar tempatan/*Local student*, \*\*Pelajar antarabangsa/*International student*
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SINOPSIS KURSUS  
*COURSE SYNOPSIS*

# SINOPSIS KURSUS | COURSE SYNOPSIS

Jabatan Sains Komputer | Department of Computer Science

|  |   |               |
|--|---|---------------|
| <b>CCS3002</b>   | <b>Prinsip Matematik Tambahan</b><br><b><i>Principles of Additional Mathematics</i></b>                         | <b>3(3+0)</b> |
| Prasyarat : Tiada<br>Kursus ini meliputi konsep teras matematik tambahan yang diperlukan dalam pengajian sains komputer. Ia merangkumi unsur penting dalam algebra, geometri, kalkulus, trigonometri dan statistik.<br><i>This course covers the core concepts of additional mathematics that are needed in the study of computer science. It includes important elements in algebra, geometry, calculus, trigonometry and statistics.</i>   |   |               |
| <b>CCS3003</b>   | <b>Struktur Diskret</b><br><b><i>Discrete Structures</i></b>  | <b>3(3+0)</b> |
| Prasyarat : Tiada<br>Kursus ini meliputi asas struktur diskret untuk menyelesaikan masalah yang berkaitan bidang sains komputer. Ia merangkumi asas logik, teori set, pengiraan dan pemodelan dalam penyelesaian masalah.<br><i>This course covers the basics of discrete structures to solve problems related to the field of computer science. It covers the basics of logic, set theory, computation and modeling in problem solving.</i>   |   |               |
| <b>CCS3100</b>   | <b>Penyelesaian Masalah dan Konsep Pengaturcaraan</b><br><b><i>Problem Solving and Programming Concepts</i></b> | <b>3(2+1)</b> |
| Prasyarat : Tiada<br>Kursus ini merangkumi teknik penyelesaian masalah pengaturcaraan bertatacara. Ia meliputi pengenalan kepada pengaturcaraan menggunakan struktur kawalan asas, struktur data asas, dan penyahpejijatan.<br><i>This course covers problem solving techniques for procedural programming. It encompasses an introduction to programming using basic control structures, basic data structures, and debugging.</i>  |   |               |
| <b>CCS3101</b>   | <b>Pengaturcaraan Berorientasikan Objek</b><br><b><i>Object-Oriented Programming</i></b>                        | <b>3(2+1)</b> |
| Prasyarat : CCS3100<br>Kursus ini meliputi teknik pengaturcaraan berorientasikan objek. Paradigma berorientasi objek yang memberikan fleksibiliti, modulariti dan penggunaan semula dibincangkan.<br><i>This course covers object-oriented programming techniques. The object-oriented paradigm that provides flexibility, modularity and reusability is discussed.</i>  |   |               |
| <b>CCS3104</b>   | <b>Pengaturcaraan Lanjutan</b><br><b><i>Advanced Programming</i></b>  | <b>3(2+1)</b> |
| Prasyarat : CCS3101<br>Kursus ini meliputi pelbagai teknik pengaturcaraan lanjutan untuk berinteraksi dengan persekitaran luaran bagi menggunakan sumbernya. Pengaturcaraan berpacu peristiwa dan pengkomputeran berprestasi tinggi turut dibincangkan.<br><i>This course covers a variety of advanced programming techniques to interact with the external environment for using its resources. Event-driven and high performance computing programming techniques are also discussed.</i>  |   |               |
| <b>CCS3200</b>   | <b>Organisasi dan Seni Bina Komputer</b><br><b><i>Computer Organization and Architecture</i></b>                | <b>3(3+0)</b> |
| Prasyarat : CCS3100<br>Kursus ini merangkumi organisasi dan seni bina komputer digital. Ia meliputi unit kendalian dan hubungan kait di antaranya yang digunakan untuk merealisasikan seni bina komputer. Langkah untuk membina komponen dalam komputer digital dibincangkan<br><i>This course covers the organization and architecture of digital computer. It includes operational units and their interconnections which are used to realize the computer architecture. Steps to construct components in digital computer are discussed</i> |   |               |



|  |   |               |
|--|---|---------------|
| <b>CCS3202</b>   | <b>Struktur Data dan Algoritma</b><br><b>Data Structures and Algorithms</b>           | <b>3(3+0)</b> |
| Prasyarat : CCS3101<br>Kursus ini meliputi konsep penyimpanan data pada ingatan komputer. Teknik menyimpan dan mengolah data secara berstruktur, serta analisis kekompleksan algoritma berdasarkan notasi Big-O dengan tujuan untuk menentukan kecekapan dibincangkan.<br><i>This course covers the concept of storing data in computer memory. Techniques for the storage and manipulation of structured data, as well as algorithm complexity analysis based on Big-O notation for the purpose of determining efficiency are discussed.</i>  |   |               |
| <b>CCS3300</b>   | <b>Sistem Pengoperasian</b><br><b>Operating Systems</b>                               | <b>3(3+0)</b> |
| Prasyarat : CCS3200<br>Kursus ini merangkumi fungsi dan komponen utama sistem pengoperasian moden. Ia meliputi prinsip formal sistem pengoperasian, pengurusan dan penjadualan proses, serta pengurusan sumber dalam sistem komputer. Persekitaran sistem pengoperasian bukan-konvensional turut dibincangkan.<br><i>This course covers the main functions and components of modern operating systems. It covers the formal principles of operating systems, process management and scheduling, as well as resource management in computer systems. Non-conventional operating system environments are also discussed.</i> |   |               |
| <b>CCS3400</b>   | <b>Prinsip Pangkalan Data</b><br><b>Database Principles</b>                           | <b>3(2+1)</b> |
| Prasyarat : CCS3101<br>Kursus ini meliputi reka bentuk pangkalan data menggunakan model data terpilih dan pemetaan ke pangkalan data hubungan. Ia termasuk merumus bahasa pertanyaan menggunakan SQL dan pengaturcaraan menggunakan prosedur tersimpan dan pemicu.<br><i>This course covers the database design using a chosen data model and mapping to relational database. It includes query language formulation using SQL and programming using stored procedure and trigger.</i>   |   |               |
| <b>CCS3402</b>   | <b>Pembangunan Aplikasi Pangkalan Data</b><br><b>Database Application Development</b> | <b>3(2+1)</b> |
| Prasyarat : CCS3400<br>Kursus ini meliputi reka bentuk dan pembangunan aplikasi dengan capaian ke pangkalan data. Pemetaan objek-hubungan dan konsep kerangka kerja Model View Controller (MVC) diberi penekanan. Beberapa model dan seni bina aplikasi web dibincangkan.<br><i>This course covers the design and development of applications with access to the database. Object-relational mapping and Model View Controller (MVC) concepts are emphasized. Several models and architectures of web application are discussed.</i>   |   |               |
| <b>CCS3600</b>   | <b>Kecerdasan Buatan</b><br><b>Artificial Intelligence</b>                            | <b>3(3+0)</b> |
| Prasyarat : CCS3202<br>Kursus ini merangkumi konsep dan teknik kecerdasan buatan. Teknik pemodelan pengetahuan, gelintaran, pemrosesan bahasa tabii, pembelajaran mesin dan pengkomputeran evolusi dibincangkan termasuk penggunaannya dalam industri.<br><i>This course covers artificial intelligence concepts and techniques. Techniques on knowledge modeling, searching, natural language processing, machine learning and evolutionary computation are discussed including their usage in industry.</i>  |   |               |
| <b>CCS3700</b>   | <b>Pengaturcaraan Sistem Terbenam</b><br><b>Embedded Systems Programming</b>          | <b>3(2+1)</b> |
| Prasyarat : CCS3300<br>Kursus ini merangkumi konsep asas dan keperluan untuk membangun suatu sistem terbenam. Ia meliputi perisian dan perkakasan bagi platform terbenam, persekitarannya, dan pendekatan pengaturcaraan terbenam.   |   |               |

The course comprises the fundamental concepts and requirements of developing an embedded system. It covers the software and hardware of the embedded platform, their environments, and embedded programming approaches.

|  |   |               |
|--|---|---------------|
| <b>CCS4200</b>   | <b>Reka Bentuk Pengkompil<br/>Compiler Design</b>                               | <b>3(3+0)</b> |
| Prasyarat : CCS3202  |   |               |
| Kursus ini memperkenalkan konsep dalam penterjemahan bahasa pengaturcaraan seperti nahu formal dan fasa reka bentuk pengkompil. Kaedah analisis sintaks seperti huraian atas-bawah dan huraian bawah-atas juga dibincangkan. Pelajar akan menghasilkan satu pengkompil mudah menggunakan alatan sedia ada. |   |               |
| <i>This course introduces the concepts in programming language translation such as formal grammar and compiler design phases. Methods for syntax analysis such as top-down and bottom-up parsing are also discussed. Students will produce a simple compiler using available tools.</i>                    |   |               |
| <b>CCS4202</b>   | <b>Reka Bentuk dan Analisis Algoritma<br/>Design and Analysis of Algorithms</b> | <b>3(3+0)</b> |
| Prasyarat : CCS3202  |   |               |
| Kursus ini meliputi teknik asas untuk mereka bentuk algoritma yang cekap dan menganalisis masa larianya. Beberapa teknik reka bentuk dan analisis algoritma akan dibincangkan. Pelajar akan turut diperkenalkan kepada algoritma graf, padanan rentetan dan lengkapan-NP.                                  |   |               |
| <i>This course covers the fundamental techniques for designing efficient algorithms and analyzing their running times. Several design and analysis techniques of algorithms will be discussed. Students will be introduced to graph algorithms, string matching and NP-completeness.</i>                   |   |               |
| <b>CCS4300</b>   | <b>Reka Bentuk Sistem Pengoperasian<br/>Operating System Design</b>             | <b>3(3+0)</b> |
| Prasyarat : CCS3300  |   |               |
| Kursus ini merangkumi reka bentuk dan teknik dalam implementasi kernel sistem pengoperasian dan perkhidmatannya. Ia meliputi fasa memulakan sistem, pengurusan dan penjadualan proses, serta pengurusan dan keselamatan sumber utama dalam sistem komputer.  |   |               |
| <i>This course covers the design and technique in the implementation of operating system kernel and its services. It encompasses the phase of starting the system, process management and scheduling, and also the management and security of the main resources in a computer system.</i>                 |   |               |
| <b>CCS4400</b>   | <b>Sistem Pangkalan Data Lanjutan<br/>Advanced Database Systems</b>             | <b>3(3+0)</b> |
| Prasyarat : CCS3400  |   |               |
| Kursus ini meliputi konsep teoretikal pangkalan data hubungan dan pemprosesan transaksi. Ia merangkumi kaedah pengurusan pangkalan data bagi pelbagai jenis sistem pangkalan data.   |   |               |
| <i>This course covers theoretical concepts of relational database and transaction processing. It includes database management methods for various types of database systems.</i>   |   |               |
| <b>CCS4402</b>   | <b>Pentadbiran Pangkalan Data<br/>Database Administration</b>                   | <b>3(3+0)</b> |
| Prasyarat : CCS4400  |   |               |
| Kursus ini meliputi konsep pentadbiran pangkalan data. Pelajar akan mempelajari aspek teori dan praktikal dalam pentadbiran pangkalan data untuk menjamin ketersediaan dan keselamatan pangkalan data, serta memantau prestasi pangkalan data.   |   |               |
| <i>This course covers the database administration concepts. Students will learn theoretical and practical aspects in database administration to assure the availability dan security of the database, as well as to monitor the database performance.</i>  |   |               |
| <b>CCS4404</b>   | <b>Analitik Bisnes<br/>Business Analytics</b>                                   | <b>3(3+0)</b> |
| Prasyarat : CCS3400  |   |               |
| Kursus ini meliputi konsep asas analitik data khusus untuk pembuatan keputusan berwawasan dalam perniagaan. Ia merangkumi pengurusan lengkap data, termasuk mengumpul, membersihkan,   |   |               |

mengorganisasi, menyimpan, governan, dan menganalisis data. Konsep gudang data, alatan dan teknik analitik, serta pelbagai aplikasi analitik bisnes dibincangkan.

*The course covers the fundamental concepts of data analytics specifically for insightful decision making in business. It encompasses the complete management of data, including collecting, cleaning, organizing, storing, governing, and analysing data. Data warehouse concepts, analytical tools and techniques, as well as various business analytics applications are discussed.*

|                |  |               |
|----------------|--|---------------|
| <b>CCS4406</b> | <b>Analitik Data Raya<br/>Big Data Analytics</b> | <b>3(3+0)</b> |
|----------------|--|---------------|

Prasyarat : CCS3400

Kursus ini meliputi pengenalan kepada teknologi data raya dan kepentingan analitik data raya. Ia merangkumi teknologi, alatan serta teknik data raya yang digunakan di dalam pelbagai industri. Penggunaan alatan dalam analitik data raya akan dibincangkan.

*This course covers the introduction to big data technology and the importance of big data analytics. It includes big data technology, tools and techniques that are used in various industries. The usage of tools in big data analytics will be discussed.*

|                |   |               |
|----------------|---|---------------|
| <b>CCS4500</b> | <b>Keselamatan Komputer<br/>Computer Security</b> | <b>3(3+0)</b> |
|----------------|---|---------------|

Prasyarat : CCS3300

Kursus ini merangkumi matlamat keselamatan dalam sistem komputer untuk menyediakan pelajar dengan pemahaman yang komprehensif tentang keselamatan komputer. Ia meliputi jenis ancaman, keselamatan perisian, keselamatan web, aplikasi mudah alih dan keselamatan rangkaian serta kaedah dan strategi tindak balas dalam memastikan keselamatan komputer.

*This course covers the security goal in computer systems to provide students with a comprehensive understanding of computer security. Topics include threats and countermeasure techniques and strategies of software, web, mobile applications and network and countermeasure methods and strategies in ensuring computer security.*

|                |                                     |               |
|----------------|-------------------------------------|---------------|
| <b>CCS4502</b> | <b>Kriptografi<br/>Cryptography</b> | <b>3(3+0)</b> |
|----------------|-------------------------------------|---------------|

Prasyarat : CCS3202

Kursus ini merangkumi prinsip, teknik, dan aplikasi kriptografi. Ia termasuk teknik matematik, mekanisme kriptografi, dan algoritma untuk menyelesaikan masalah berkaitan keselamatan maklumat.

*This course covers the principles, techniques, and applications of cryptography. It includes mathematical techniques, cryptographic mechanism, and algorithms for solving problem related to information security.*

|                |   |               |
|----------------|---|---------------|
| <b>CCS4504</b> | <b>Forensik Komputer<br/>Computer Forensics</b> | <b>3(3+0)</b> |
|----------------|---|---------------|

Prasyarat : CCS3300

Kursus ini merangkumi metodologi forensik komputer dan aplikasi praktikal alat-alat yang relevan. Ia juga menekankan pertimbangan undang-undang yang berkaitan dan memberikan penerangan tentang garis panduan dasar.

*This course covers computer forensic methodologies and the practical application of relevant tools. It also emphasizes relevant legal considerations and sheds light on policy guidelines.*

|                |   |               |
|----------------|---|---------------|
| <b>CCS4506</b> | <b>Keselamatan Pangkalan Data<br/>Database Security</b> | <b>3(3+0)</b> |
|----------------|---|---------------|

Prasyarat : CCS3402

Kursus ini meliputi konsep dan isu berkaitan keselamatan pangkalan data, yang melibatkan pengesahihan, keizinan dan kawalan capaian, dan pengauditan. Teknik keselamatan pangkalan data yang digunakan dalam Sistem Pengurusan Pangkalan Data dibincangkan.

*This course covers the concepts and issues on database security, which involve authentication, authorization and access control, and auditing. Database security techniques used in Database Management Systems (DBMS) are discussed.*

|  |  |               |
|--|--|---------------|
| <b>CCS4600</b>   | <b>Perlombongan Data<br/>Data Mining</b>                                   | <b>3(3+0)</b> |
| Prasyarat : CCS3600<br>Kursus ini meliputi konsep dan teknik perlombongan data, yang merangkumi pra-pemprosesan data, serta fungsi dan perisian perlombongan data. Teknik terpilih digunakan dalam pembangunan aplikasi perlombongan data.<br><i>This course covers concepts and techniques of data mining, which include data pre-processing, as well as data mining functions and software. The chosen techniques are applied in the data mining application system development.</i>   |  |               |
| <b>CCS4602</b>   | <b>Pembelajaran Mesin<br/>Machine Learning</b>                             | <b>3(3+0)</b> |
| Prasyarat : CCS3600<br>Kursus ini meliputi konsep pembelajaran mesin. Algoritma dalam pengecaman corak dan pengoptimuman yang berdasarkan kaedah statistik, rangkaian neural dan pengkomputeran berevolusi dibincangkan. Peralatan perisian pembelajaran mesin yang sesuai akan digunakan dalam pembangunan aplikasi.<br><i>This course covers the concepts of machine learning. Algorithms for pattern recognition and optimization that are based on statistical methods, neural networks and evolutionary computation are discussed. Appropriate software tools for machine learning will be used in application development.</i> |  |               |
| <b>CCS4604</b>   | <b>Sistem Berasaskan Pengetahuan<br/>Knowledge Based System</b>            | <b>3(3+0)</b> |
| Prasyarat : CCS3600<br>Kursus ini meliputi sistem berasaskan pengetahuan untuk domain pengetahuan khusus. Teknik pemerolehan pengetahuan, perwakilan pengetahuan, dan aplikasi domain masalah tertentu dibincangkan. Kaedah inferens juga diberi penekanan.<br><i>This course covers the knowledge-based systems for specific knowledge domains. Techniques of knowledge acquisition, knowledge representation, and the applications in a particular problem domain are discussed. Inference methods are also emphasized.</i>  |  |               |
| <b>CCS4700</b>   | <b>Pembangunan Sistem Terbenam<br/>Embedded Systems Development</b>        | <b>3(3+0)</b> |
| Prasyarat : CCS3700<br>Kursus ini meliputi pembangunan aplikasi untuk sistem terbenam dengan menggunakan penderia, persisian dan sokongan komunikasi rangkaian termasuk Internet Benda (IoT). Persekitaran dan metodologi pembangunan sistem terbenam dibincangkan.<br><i>This course covers application development for embedded systems using sensors, peripherals and network communication support including the Internet of Things (IoT). Embedded systems development environments and methodologies are discussed.</i>  |  |               |
| <b>CCS4702</b>   | <b>Pembangunan Sistem Robotik<br/>Robotic System Development</b>           | <b>3(3+0)</b> |
| Prasyarat : CCS3202<br>Kursus ini meliputi pengenalan kepada sistem robotik, termasuk struktur mekanikal sistem robot, mekanik pamanipulasi robot dan sistem kawalan. Asas robot berautonomi diberi penekanan.<br><i>This course covers introduction to robotics system, which includes the robotic sensing, motion control and adaptive control. The fundamentals of autonomous robots is emphasised.</i>   |  |               |
| <b>CCS4704</b>   | <b>Internet Benda dan Aplikasi<br/>Internet of Things and Applications</b> | <b>3(3+0)</b> |
| Prasyarat : CCS3700<br>Kursus ini merangkumi aspek teknikal yang digunakan dalam pembangunan, pemprosesan dan pengurusan Internet benda (IoT). Perkhidmatan, keselamatan, aplikasi pembelajaran mesin dan implikasi terhadap masyarakat juga dibincangkan.<br><i>This course covers the technical aspects used in the development, processing and management of the Internet of Things (IoT). Services, security, machine learning applications and implications for society are also discussed.</i>   |  |               |

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| <b>CCS4901</b> | <b>Latihan Industri<br/>Industrial Training</b> | <b>12(0+12)</b> |
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Prasyarat : Dengan Kebenaran Jabatan

Melalui kursus ini, pelajar didedahkan kepada persekitaran kerja yang sebenar di industri atau organisasi. Latihan merangkumi aplikasi aspek teori dan praktikal yang telah dipelajari dengan amalan semasa di tempat kerja. Kemahiran menyelesaikan masalah dan komunikasi turut diberi penekanan.

*In this course, students are exposed to real working environments in industries or organizations. Training includes application of the theoretical and practical aspects that have been studied with current practices in the workplace. Problem solving and communication skills are also emphasized.*

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| <b>CCS4949</b> | <b>Projek Bachelor<br/>Bachelor Project</b> | <b>6(0+6)</b> |
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Prasyarat : Dengan Kebenaran Jabatan

Kursus ini merangkumi aspek perancangan dan pelaksanaan projek. Ini termasuklah pemilihan tajuk, melaksanakan kajian kritis, mereka bentuk dan melaksanakan strategi kerja, mengumpul dan menganalisis data, serta mendokumentasi dan membentangkan hasil projek.

*This course covers the aspects of planning and executing project. These include title selection, conducting critical review, designing and performing work strategy, collecting and analysing data, documenting and presenting project output.*

# SINOPSIS KURSUS | COURSE SYNOPSIS

Jabatan Multimedia | Department of Multimedia

|   |   |               |
|---|---|---------------|
| <b>CSM3001</b>  | <b>Teknologi Multimedia</b><br><b>Multimedia Technology</b>                                     | <b>3(3+0)</b> |
| Prasyarat : Tiada   |   |               |
| Kursus ini merangkumi pengenalan kepada teknologi multimedia yang melibatkan perkakasan dan perisian komputer yang digunakan untuk menghasilkan aplikasi multimedia interaktif. Ia meliputi perkhidmatan dan platform untuk penggunaan dan pembangunan aplikasi multimedia.<br><i>This course covers an introduction to multimedia technology involving computer hardware and software used to produce interactive multimedia applications. It covers services and platforms for the use and development of multimedia applications.</i>  |   |               |
| <b>CSM3002</b>  | <b>Matematik untuk Pengkomputeran Multimedia</b><br><b>Mathematics for Multimedia Computing</b> | <b>3(3+0)</b> |
| Prasyarat : CCS3100   |   |               |
| Kursus ini merangkumi asas matematik dalam pengkomputeran multimedia. Penggunaan teori matematik dalam melakukan operasi pengkomputeran pada data multimedia berbentuk vektor dan matriks, termasuk juga aplikasinya dalam algoritma pembelajaran mesin dan pembelajaran mendalam diberi penekanan.<br><i>This course covers mathematical theory in multimedia computing. The use of mathematical theory to perform various computing operations on multimedia data in the form of vector and matrix, including its application in machine learning and deep learning algorithms are emphasised.</i>  |   |               |
| <b>CSM3204</b>  | <b>Grafik Komputer dan Kemasan</b><br><b>Computer Graphics and Rendering</b>                    | <b>3(2+1)</b> |
| Prasyarat : CCS3101   |   |               |
| Kursus ini merangkumi konsep asas dalam grafik komputer dari aspek perkakasan dan perisian. Ia meliputi teknik pemodelan tiga dimensi, algoritma kemasan grafik komputer bagi paparan yang realistik, dan penggunaan kaedah surihan cahaya dalam kemasan grafik komputer.<br><i>This course covers basic concepts in computer graphics from the aspect of hardware and software. It covers three-dimensional modeling techniques, computer graphics rendering algorithms for realistic displays, and the use of ray tracing methods in computer graphics rendering.</i>   |   |               |
| <b>CSM3206</b>  | <b>Pemprosesan Bahasa Tabii</b><br><b>Natural Language Processing</b>                           | <b>3(2+1)</b> |
| Prasyarat : CCS3101   |   |               |
| Kursus ini merangkumi model pemprosesan bahasa secara linguistik, statistik dan neural dalam dua subbidang utama Pemprosesan Bahasa Tabii iaitu sintaks dan semantik. Ia meliputi model yang boleh memahami dan menghasilkan bahasa.<br><i>This course covers linguistic, statistical and neural language processing models in two main subfields of Natural Language Processing, namely syntax and semantic. It includes models that can understand and produce languages.</i>   |   |               |
| <b>CSM3307</b>  | <b>Realiti Maya</b><br><b>Virtual Reality</b>   | <b>3(2+1)</b> |
| Prasyarat : CCS3101   |   |               |
| Kursus ini merangkumi konsep asas realiti maya dan kemahiran yang terlibat dalam membangunkan suatu persekitaran realiti maya. Ia meliputi penggunaan perisian dan perkakasan untuk realiti maya, serta menekankan pada aspek grafik komputer, bahasa pengaturcaraan, interaktiviti, teknik animasi serta penggunaan teknologi untuk penghasilan metasemesta.<br><i>This course covers the basic concepts of virtual reality and the skills involved in developing a virtual reality environment. It covers the use of software and hardware for virtual reality, as well as emphasis on computer graphics, programming languages, interactivity, animation techniques as well as the use of technology to produce metaverse.</i> |   |               |



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| <b>CSM4901</b> | <b>Latihan Industri</b><br><b><i>Industrial Training</i></b> | <b>12(0+12)</b> |
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Prasyarat : Dengan Kebenaran Jabatan

Melalui kursus ini, pelajar didedahkan kepada persekitaran kerja yang sebenar di industri/ organisasi. Latihan merangkumi aplikasi aspek teori dan praktikal yang telah dipelajari dengan amalan semasa di tempat kerja. Kemahiran menyelesaikan masalah dan komunikasi turut diberi penekanan.

*In this course, students are exposed to real working environment in industries/ organisations. Training includes application of the theoretical and practical aspects that have been studied with current practices in the workplace. Problem solving and communication skills are also emphasised.*

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| <b>CSM4949</b> | <b>Projek Bachelo</b><br><b><i>Bachelor Project</i></b> | <b>6(0+6)</b> |
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Prasyarat : Dengan Kebenaran Jabatan

Kursus ini merangkumi aspek perancangan dan pelaksanaan projek. Ini termasuklah pemilihan tajuk, melaksanakan kajian kritis, mereka bentuk dan melaksanakan strategi kerja, mengumpul dan menganalisis data, serta mendokumentasi dan membentangkan hasil projek.

*This course covers the aspects of planning and executing project. These include title selection, conducting critical review, designing, and performing work strategy, collecting and analysing data, documenting and presenting project output.*



## SINOPSIS KURSUS | COURSE SYNOPSIS

Jabatan Teknologi Komunikasi dan Rangkaian |  
Department of Communication Technology and Network

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|---|---|---------------|
| <b>CND3100</b>  | <b>Pengaturcaraan Rangkaian<br/>Network Programming</b>                         | <b>3(2+1)</b> |
| Prasyarat : CND3200<br>Kursus ini merangkumi konsep pengaturcaraan, teknologi dan pembangunan aplikasi rangkaian bersekuriti. Ia termasuklah penulisan atur cara rangkaian menggunakan antara muka atur cara aplikasi (API).<br><i>This course covers programming concepts, technology and the development of secured network applications. It includes writing network programs using Application Programming Interface (API).</i>   |   |               |
| <b>CND3101</b>  | <b>Pengaturcaraan Python<br/>Python Programming</b>                             | <b>3(2+1)</b> |
| Prasyarat : CCS3100<br>Kursus ini merangkumi sintaks Python dan penggunaan struktur data bina-dalam, kaedah bina-dalam dan pustaka. Analisis dan visualisasi data dari pustaka pengikisan web, pembelajaran mesin dan pembelajaran mendalam diberi penekanan.<br><i>This course covers Python syntax and usage of the built-in data structures, built-in methods and libraries. Data analysis and visualization from the web scraping, machine learning and deep learning libraries are emphasized.</i>   |   |               |
| <b>CND3102</b>  | <b>Pengaturcaraan C++<br/>C++ Programming</b>                                   | <b>3(2+1)</b> |
| Prasyarat : CCS3101<br>Kursus ini merangkumi asas pengaturcaraan dalam bahasa pengaturcaraan C++. Konsep dan teknik yang digunakan untuk penghasilan kod program secara berstruktur, modular dan guna semula dalam mereka bentuk program komputer. Penyelesaian masalah berkaitan dengan asas pengaturcaraan soket, selari, dan tertanam menggunakan C++ diberi penekanan.<br><i>This course covers the basic programming in the C++ programming language. The concepts and techniques are used to create structured, modular, and reusable code in designing a computer program. Problem-solving related to a socket, parallel, and embedded programming basics using C++ is emphasized.</i>                                     |   |               |
| <b>CND3200</b>  | <b>Komunikasi dan Rangkaian Komputer<br/>Computer Network and Communication</b> | <b>3(3+0)</b> |
| Prasyarat : Tiada<br>Kursus ini merangkumi konsep asas dalam komunikasi komputer dan piawai model rangkaian. Ciri-ciri transmisi fizikal, seni bina rangkaian, jenis rangkaian, teknologi terkini rangkaian komputer, komponen utama dalam sistem komunikasi data, rangkaian kawasan setempat (LAN) dan rangkaian kawasan luas (WAN) diberi penekanan.<br><i>This course covers the basic concepts of computer communications and the network model standard. The characteristics of physical transmission, network architecture, types of networks, the latest technologies on computer networks, the major components of data communication systems, local area networks (LAN) and wide area networks (WAN) are emphasized.</i> |   |               |
| <b>CND3201</b>  | <b>Teknologi Antara Rangkaian<br/>Internetworking Technology</b>                | <b>3(2+1)</b> |
| Prasyarat : CND3200<br>Kursus ini merangkumi aspek protokol rangkaian serta pemasangan dan konfigurasi alatan rangkaian. Ia meliputi ciri-ciri protokol pada semua paras rangkaian piawai TCP/IP dan konfigurasi alatan rangkaian seperti suis dan penghala.<br><i>This course covers the network protocols together with the installation and configuration of network devices. It encompasses the characteristics of protocols for all standard TCP/IP layers and network configuration of switches and routers.</i>  |   |               |

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| <b>CND3202</b>  | <b>Pengkomputeran Teragih dan Selari</b><br><b><i>Distributed and Parallel Computing</i></b>                     | <b>3(2+1)</b> |
| Prasyarat : CND3200<br>Kursus merangkumi konsep pengaturcaraan selari dan teragih yang berasaskan kepada ingatan berkongsi, teragih dan hibrid. Penyegerakan, taburan data, pengimbangan muatan, penjadualan, pemetaan data, komunikasi data, reka bentuk, pembangunan dan penilaian prestasi atur cara selari dan teragih diberi penekanan.<br><i>This course covers concepts of parallel and distributed programming based on shared, distributed and hybrid memory. Synchronization, data distribution, load balancing, scheduling, data partitioning, data communication, designs, develops, and evaluates the parallel and distributed programs are emphasized.</i>  |  |               |
| <b>CND3300</b>  | <b>Pentadbiran Sistem dan Rangkaian</b><br><b><i>System and Network Administration</i></b>                       | <b>3(2+1)</b> |
| Prasyarat : CND3200<br>Kursus ini merangkumi konfigurasi dan kaedah pengurusan sistem dan rangkaian berdasarkan pelantar Unix/Linux. Pemulihan bencana dan keselamatan bagi memastikan sistem dan rangkaian yang stabil dan selamat diberi penekanan.<br><i>This course covers system and network configuration and management methods based on Unix/Linux platform. Disaster discovery and security to ensure stable and secure system and network are emphasized.</i>   |  |               |
| <b>CND3400</b>  | <b>Aplikasi Mudah Alih</b><br><b><i>Mobile Application</i></b>   | <b>3(2+1)</b> |
| Prasyarat : CCS3101<br>Kursus ini merangkumi konsep, seni bina, rangka kerja, reka bentuk antara muka, teknik, dan metodologi pembangunan aplikasi mudah alih. Praktis yang berjaya dalam membangunkan aplikasi untuk pasaran perniagaan mudah alih semasa juga diberikan penekanan.<br><i>This course covers the concept, architecture, framework, interface design, technique, and methodology of mobile application development. Successful practices in developing an application for the current mobile business market are also emphasised.</i>   |  |               |
| <b>CND4200</b>  | <b>Reka Bentuk dan Pengurusan Rangkaian Perusahaan</b><br><b><i>Enterprise Network Design and Management</i></b> | <b>3(3+0)</b> |
| Prasyarat : CND3200<br>Kursus ini merangkumi aspek analisis dan reka bentuk rangkaian komputer dan pengurusan rangkaian. Pelajar didedahkan tentang aspek teknikal dan kekangan dalam implementasi sesuatu sistem rangkaian komputer. Aspek operasi, penggunaan alatan diagnostik dan piawaian semasa bagi sistem pengurusan rangkaian turut dibincangkan.<br><i>This course covers the analysis and design of computer networks and the network management. Students are exposed to the technical aspects and constraints in the implementation of a computer network system. The operational aspect, the utilisation of diagnostic tools and the current standard of network management systems are also discussed.</i> |  |               |
| <b>CND4201</b>  | <b>Rangkaian Wayarles dan Bergerak</b><br><b><i>Wireless and Mobile Network</i></b>                              | <b>3(3+0)</b> |
| Prasyarat : CND3200<br>Kursus ini meliputi konsep asas teknologi rangkaian wayarles dan bergerak. Ia turut merangkumi model, prinsip reka bentuk, mekanisme dan penyelesaian masalah dalam rangkaian wayarles dan bergerak yang selamat.<br><i>This course comprises the basic concept of wireless networks and mobile technologies. It also includes models, design principles, mechanisms and solutions used in secured wireless networks.</i>  |  |               |
| <b>CND4300</b>  | <b>Rangkaian Tentuan Perisian</b><br><b><i>Software Defined Network</i></b>                                      | <b>3(3+0)</b> |
| Prasyarat : CND3201<br>Kursus ini merangkumi konsep rangkaian tentuan perisian (SDN). Ia meliputi perubahan pelantar rangkaian asas dan aplikasi yang digunakan oleh operasi, pengurusan dan keselamatan yang berbeza   |  |               |

dalam SDN. Prinsip, blok binaan dan reka bentuk bagi SDN dan fungsi rangkaian maya (NFV) diberikan penekanan.

*This course covers the concept of software defined network (SDN). It includes changes of the underlying networking platform and application applied by different operation, management and security in SDN. The principles, building block and design of SDN and Network Function Virtualization (NFV) are emphasized.*

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| <b>CND4401</b> | <b>Pengkomputeran Awan<br/>Cloud Computing</b> | <b>3(3+0)</b> |
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Prasyarat : CND3200

Kursus ini merangkumi konsep pembangunan dan penggunaan perkhidmatan rangkaian dalam persekitaran pengkomputeran awan. Perkhidmatan awan berasaskan infrastruktur, pelantar dan perisian diberi penekanan.

*This course covers the concept of network service development and use in cloud computing environment. Cloud services based on infrastructure, platform and software are emphasized.*

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| <b>CND4400</b> | <b>Sistem Teragih<br/>Distributed Systems</b> | <b>3(3+0)</b> |
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Prasyarat : CND3200

Kursus ini merangkumi bidang dalam rangkaian computer. Ia meliputi sistem pelanggan-pelayan, pangkalan data teragih, sistem pengoperasian teragih, sistem aplikasi teragih, sistem terbuka dan isu terkini dalam sistem teragih.

*This course covers the area of computer networks. It includes client-server systems, distributed databases, distributed operating systems, distributed application systems, open systems and recent issues in distributed system.*

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| <b>CND4500</b> | <b>Keselamatan Rangkaian<br/>Network Security</b> | <b>3(3+0)</b> |
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Prasyarat : CND3200

Kursus ini merangkumi konsep dan prinsip kepada keselamatan rangkaian. Ia meliputi polisi keselamatan rangkaian, algoritma kriptografi, protokol dan aplikasi keselamatan rangkaian. Keselamatan emel dan keselamatan protokol Internet diberi penekanan.

*This course covers the concepts and principles of network security. It includes network security policy, cryptographic algorithms, network security protocols and applications. Email security and Internet protocol security are emphasized.*

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| <b>CND4503</b> | <b>Penilaian Kerentanan dan Pengujian Penembusan<br/>Vulnerability Assessment and Penetration Testing</b> | <b>3(3+0)</b> |
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Prasyarat : CND4500 atau CCS4500

Kursus ini meliputi asas dan teori sokongan dalam memahami cara di mana sistem rangkaian komputer boleh diserang dan diceroboh dengan mempergunakan kerentanan sistem. Ia merangkumi beberapa prinsip dan kaedah untuk menaksir dan menilai keselamatan rangkaian secara beretika.

*This course covers the foundations and theoretical underpinnings for an understanding of the way in which computer network systems can be attacked by using vulnerabilities in the system. It includes a number of principles and methods to evaluate and assess network security ethically.*

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| <b>CND4504</b> | <b>Teknologi Blok Rantai<br/>Blockchain Technology</b> | <b>3(3+0)</b> |
|----------------|--|---------------|

Prasyarat : CND4500 atau CCS4500

Kursus ini meliputi definisi, ciri, jenis dan faedah teknologi blok rantai bersama dengan mekanisme konsensus yang menjadi teras teknologi blok rantai. Ia merangkumi konsep desentralisasi, pelbagai kaedah dan pelantar yang digunakan di dalam pelbagai industri. Teknik kriptografi dan penggunaan kontrak pintar untuk pengembangan aplikasi blok rantai juga diberi penekanan.

*This course covers the definitions, features, types and benefits of blockchain technology along with consensus mechanism that are the core of blockchain technology. It includes decentralization concept, various methods and platforms that are used in various industries. The cryptographic techniques and usage of smart contracts for the development of blockchain applications are emphasized.*

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| <b>CND4901</b> | <b>Latihan Industri<br/>Industrial Training</b> | <b>12(0+12)</b> |
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Prasyarat : Dengan Kebenaran Jabatan

Kursus ini mendedahkan pelajar kepada persekitaran kerja yang sebenar di industri/organisasi. Latihan merangkumi aplikasi aspek teori dan praktikal yang telah dipelajari dengan amalan semasa di tempat kerja. Kemahiran menyelesaikan masalah dan komunikasi turut diberi penekanan.

*This course exposes the students to real working environment in industries/organizations. Training includes application of the theoretical and practical aspects that have been studied with current practices in the workplace. Problem solving and communication skills are also emphasized.*

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| <b>CND4949</b> | <b>Projek Bachelor<br/>Bachelor Project</b> | <b>6(0+6)</b> |
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Prasyarat : Dengan Kebenaran Jabatan

Kursus ini merangkumi aspek perancangan dan pelaksanaan projek. Ini termasuklah pemilihan tajuk, melaksanakan kajian kritis, mereka bentuk dan melaksanakan strategi kerja, mengumpul dan menganalisis data, serta mendokumentasi dan membentangkan hasil projek.

*This course covers the aspects of planning and executing project. These include title selection, conducting critical review, designing and performing work strategy, collecting and analysing data, documenting and presenting project output.*

## SINOPSIS KURSUS | COURSE SYNOPSIS

Jabatan Kejuruteraan Perisian dan Sistem Maklumat |  
Department of Software Engineering and Information System

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|--|--|---------------|
| <b>SSW3001</b>   | <b>Kejuruteraan Perisian<br/>Software Engineering</b>                          | <b>3(3+0)</b> |
| Prasyarat : CCS3101  |  |               |
| <p>Kursus ini merangkumi pengetahuan asas dan kemahiran dalam kejuruteraan perisian. Prinsip dan kaedah kejuruteraan perisian, termasuklah alatan dan amalan kejuruteraan perisian terkini dibincangkan. Teknik-teknik analisis keperluan, reka bentuk, pelaksanaan dan pengujian dititikberatkan. <i>This course covers the foundation knowledge and skills in software engineering. Software engineering principles and methods including emerging software engineering practices and tools are discussed. Requirement analysis, design, implementation, and testing techniques are emphasised.</i></p>  |  |               |
| <b>SSW3200</b>   | <b>Keusahawanan Digital<br/>Entrepreneurship</b>                               | <b>3(2+1)</b> |
| Prasyarat : Tiada  |  |               |
| <p>Kursus ini meliputi konsep dan amalan keusahawanan dalam pembangunan, pelaksanaan dan pengaplikasian teknologi digital. Ia merangkumi model perniagaan terkini, perkongsian ekonomi digital, strategi inovasi dan komponen rancangan perniagaan. Kemahiran menangani cabaran dan mencari peluang perniagaan berasaskan teknologi digital diberi penekanan. <i>This course covers concept and practice of entrepreneurship in the development, implementation and application of digital technology. It includes relevant business models, digital economy sharing, innovative strategies and business plan components. The skills of managing challenges and finding business opportunities based on digital technology are emphasized.</i></p> |  |               |
| <b>SSW3201</b>   | <b>Statistik bagi Sains Komputer<br/>Statistics for Computer Science</b>       | <b>3(3+0)</b> |
| Prasyarat : Tiada  |  |               |
| <p>Kursus ini merangkumi konsep asas statistik dan kaedah statistik untuk menganalisis data dan membuat inferens. Ia meliputi penggunaan kaedah yang sesuai dalam analisis, membuat keputusan, dan membuat tafsiran menggunakan istilah statistik. Penyelesaian masalah dalam sains komputer diberi penekanan. <i>This course covers the fundamental concepts of statistics and statistical methods to analyze data and make inferences. It encompasses the use of appropriate methods in analysis, makes decisions and interpretation using statistical terms. Solving problems in computer science is emphasized.</i></p>  |  |               |
| <b>SSW3301</b>   | <b>Kejuruteraan Keperluan Perisian<br/>Software Requirements Engineering</b>   | <b>3(3+0)</b> |
| Prasyarat : CCS3100  |  |               |
| <p>Kursus ini meliputi kepentingan keperluan perisian, cara mengumpulkan keperluan perisian yang betul, dan mendokumentasi keperluan perisian dengan efektif. Ia termasuk memperincikan model keperluan untuk reka bentuk perisian. <i>This course covers software requirements considerations, how to gather the right software requirements, and document the software requirements effectively. It includes refining the requirements model for software design.</i></p>  |  |               |
| <b>SSW3302</b>   | <b>Seni Bina dan Reka Bentuk Perisian<br/>Software Architecture and Design</b> | <b>3(3+0)</b> |
| Prasyarat : SSW3301  |  |               |
| <p>Kursus ini merangkumi konsep, prinsip, dan teknik dalam mereka bentuk perisian yang terdiri dari seni bina dan reka bentuk terperinci. Ia meliputi pendekatan pemodelan reka bentuk berorientasikan objek berdasarkan keperluan perisian. Gaya seni bina dan evolusi pengkomputeran semasa turut diberi penekanan. <i>This course covers concepts, principles, and techniques in designing software consisting of architecture and detailed design. It includes object-oriented design modeling approach based on the software requirements. The architectural style and current computing evolution are also emphasized.</i></p>   |  |               |

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| <b>SSW3305</b>   | <b>Pengujian Perisian<br/>Software Testing</b>   | <b>3(3+0)</b> |
| Prasyarat : SSW3302<br>Kursus ini meliputi konsep asas pengujian perisian. Ia merangkumi aktiviti dan teknik pengujian yang bersesuaian dengan perisian yang akan diuji. Metrik dan pengurusan pengujian turut diberi penekanan.<br><i>This course covers fundamental concepts of software testing. It includes testing activities and techniques that are appropriate to the software to be tested. Testing metrics and management are also emphasized.</i>   |  |               |
| <b>SSW3307</b>   | <b>Pengalaman Pengguna dan Antara Muka Pengguna<br/>User Experience and User Interface</b> | <b>3(3+0)</b> |
| Prasyarat : SSW3302 atau SSW3001<br>Kursus ini mengandungi konsep pengalaman pengguna dan ciri antara muka pengguna yang baik. Ia juga meliputi metodologi dan rangka kerja reka bentuk yang dapat menghasilkan antara muka yang boleh guna dan pengalaman pengguna yang positif.<br><i>This course consists of the concept and characteristics of the good user experience and user interface. It also covers the methodology and frameworks to produce a usable user interface and a positive user experience.</i>   |  |               |
| <b>SSW3308</b>   | <b>Pembangunan Aplikasi Web<br/>Web Application Development</b>                            | <b>3(2+1)</b> |
| Prasyarat : Tiada<br>Kursus ini merangkumi konsep asas teknologi Web dan pembangunan aplikasi web. Ia juga meliputi rangka kerja, pangkalan data, dan operasi aplikasi Web.<br><i>This course covers the fundamental concepts of web technology and Web applications development. It also includes frameworks, database, and operations of Web application.</i>  |  |               |
| <b>SSW3310</b>   | <b>Pengurusan Projek Perisian<br/>Software Project Management</b>                          | <b>3(3+0)</b> |
| Prasyarat : SSW3301 atau SSW3001<br>Kursus ini merangkumi fungsi dan tanggungjawab pengurusan perisian dan bagaimana mengurus projek pembangunan perisian. Ia meliputi penskedulan dan perancangan projek, penganggaran kos, pengurusan risiko, manusia, kualiti, dokumentasi dan komunikasi projek. Penghasilan produk yang berkualiti tepat pada masa dan dalam lingkungan belanjawan diberi penekanan.<br><i>This course covers the functions and responsibilities of software management and how to manage software development project. It covers project scheduling and planning, cost estimation, and managing project related to risk, human, quality, documentation and communication. The production of quality product in time and within budget is emphasized.</i> |  |               |
| <b>SSW3400</b>   | <b>Projek Kejuruteraan Perisian Berpasukan<br/>Software Engineering Team Project</b>       | <b>3(2+1)</b> |
| Prasyarat : SSW3310<br>Kursus ini merangkumi teknik pembangunan projek perisian secara berpasukan. Ia merangkumi fungsi, gaya dan model pengurusan pasukan pembangunan perisian yang efektif. Prestasi dan penilaian pasukan turut dibincangkan.<br><i>This course covers techniques in software projects development as a team. It comprises functions, styles and models for effective software development team management. Team performance and evaluation are also discussed.</i>   |  |               |
| <b>SSW3401</b>   | <b>Pembangunan Aplikasi Mudah Alih<br/>Mobile Application Development</b>                  | <b>3(2+1)</b> |
| Prasyarat : CCS3101<br>Kursus ini merangkumi konsep, teknik, kerangka dan kaedah terkini dalam pembangunan aplikasi mudah alih merentasi pelbagai pelantar dengan satu kod tunggal. Teknologi peranti mudah alih, kekangan reka bentuk dan peluang serta pilihan teknologi yang bersesuaian juga turut dibincangkan.<br><i>This course covers the latest concepts, techniques, framework and methods in mobile application development across multiple platforms with a single codebase. Mobile devices technology, design constraints and opportunities as well as suitable technology options are also discussed.</i>  |  |               |

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| <b>SSW3402</b>  | <b>Pembangunan Sistem Perusahaan</b><br><b>Enterprise Systems Development</b>                    | <b>3(2+1)</b> |
| Prasyarat : SSW3308   |  |               |
| Kursus ini merangkumi konsep dalam membangunkan sistem perusahaan. Ia meliputi penggunaan teknologi terkini dan seni bina reka bentuk untuk integrasi sistem perusahaan. Asas keselamatan bagi sistem perusahaan juga dibincangkan.   |  |               |
| <i>This course covers concept in developing the enterprise system. It includes the application of latest technologies architecture for enterprise system integration. Fundamental of security for enterprise system is also discussed.</i>  |  |               |
| <b>SSW4201</b>  | <b>Metodologi Pembangunan Perisian</b><br><b>Software Development Methodology</b>                | <b>3(3+0)</b> |
| Prasyarat : SSW3301   |  |               |
| Kursus ini merangkumi kepelbagaian metodologi, teknik, alatan dan model pembangunan perisian. Ia meliputi kaedah tradisional sehingga metodologi pembangunan perisian yang moden. Pendekatan, teknik, isu dan cabaran semasa dalam kejuruteraan perisian dibincangkan.  |  |               |
| <i>This course covers the diversity of methodology, technique, tool and software development model. It encompasses traditional methodology to modern software development methodologies. Approach, technique, issue and challenges in contemporary software engineering are discussed.</i>  |  |               |
| <b>SSW4202</b>  | <b>Etika dalam Pengkomputeran</b><br><b>Ethics in Computing</b>                                  | <b>3(3+0)</b> |
| Prasyarat : CCS3100   |  |               |
| Kursus ini meliputi konsep etika dalam pengkomputeran dan kaitannya dengan teknologi maklumat. Ini termasuklah kod etika professional dan polisi yang berkaitan serta isu-isu seperti, harta intelek, hak cipta, cetak rompak, keselamatan siber, privasi, dan isu sosial. Kepentingan etika terhadap semua lapisan pengguna komputer seperti pembangun perisian, para profesional, ahli perniagaan dan pengguna akhir juga diberi penekanan. |  |               |
| <i>This course covers the concepts of ethics in computerization and its relation to information technology. This includes professional code of ethics and related policies as well as issues such as intellectual properties, copyright, piracy, cyber security, and social issues. The importance of ethics to all levels of computer users such as professional, software developers, businessmen and end users are also emphasized.</i>    |  |               |
| <b>SSW4303</b>  | <b>Kaedah Formal dalam Pembangunan Perisian</b><br><b>Formal Methods in Software Development</b> | <b>3(3+0)</b> |
| Prasyarat: SSW3301 atau SSW3001   |  |               |
| Kursus ini merangkumi kaedah formal dalam pembangunan perisian yang dapat digunakan dalam membina perisian. Penggunaan ini termasuk menspesifikasi dan mentahkik perisian. Beberapa bahasa kaedah formal dibincangkan.  |  |               |
| <i>This course covers formal methods which can be used in developing software. The usage includes specifying and verifying software. Several formal method languages are discussed.</i>   |  |               |
| <b>SSW4351</b>  | <b>Penyelenggaraan dan Evolusi Perisian</b><br><b>Software Maintenance and Evolution</b>         | <b>3(3+0)</b> |
| Prasyarat: SSW3301  |  |               |
| Kursus ini meliputi konsep, proses dan teknik-teknik yang menyokong kebolehan sesebuah sistem perisian untuk berubah, berkembang dan bertahan. Ia meliputi perancangan, proses, teknik, alatan dan pengawalan perubahan perisian. Isu-isu berkaitan masa depan dan perubahan teknologi berorientasikan objek terhadap penyelenggaraan perisian juga dibincangkan.   |  |               |
| <i>This course comprises concept, process and techniques, which can support the ability of a software system to change, evolve and sustain. It covers plans, processes, techniques, tools and changed-control software. Issues related to software maintenance, which include object-oriented software maintenance and the future of software maintenance are also discussed.</i>   |  |               |

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| <b>SSW4353</b>   | <b>Pembangunan Perisian Berasaskan Komponen<br/><i>Component Based Software Development</i></b>             | <b>3(3+0)</b> |
| <p>Prasyarat: SSW3302</p> <p>Kursus ini merangkumi konsep guna semula dan pembangunan perisian berasaskan komponen. Kursus ini turut memperkenalkan teknologi, model dan seni bina komponen, serta perkhidmatan web. Isu kejuruteraan perisian berasaskan komponen turut dibincangkan.</p> <p><i>This course covers concept of reusability and component-based software engineering. The course also introduces component technologies, models and architecture, as well as web services. Issues on component-based software engineering are also discussed.</i></p>   |   |               |
| <b>SSW4355</b>   | <b>Kejuruteraan Perisian Masa Nyata<br/><i>Real-Time Software Engineering</i></b>                           | <b>3(3+0)</b> |
| <p>Prasyarat: SSW3302</p> <p>Kursus ini merangkumi pengetahuan asas dalam kejuruteraan perisian bagi perisian masa nyata. Prinsip dan kaedah kejuruteraan perisian masa nyata termasuk praktis terkini dalam pembangunan perisian masa nyata dibincangkan. Teknik analisis keperluan, reka bentuk, verifikasi dan validasi juga diberi penekanan.</p> <p><i>This course covers foundation knowledge and skills in real-time software engineering. Real-time software engineering principles and methods including current and emerging software engineering practices in real-time software development are discussed. Requirement analysis, design, verification and validation techniques are also emphasized.</i></p>   |   |               |
| <b>SSW4356</b>   | <b>Pembangunan Perisian Selamat<br/><i>Secure Software Development</i></b>                                  | <b>3(3+0)</b> |
| <p>Prasyarat: CCS3300</p> <p>Kursus ini merangkumi metodologi pembangunan perisian selamat dan mengkaji strategi untuk mengintegrasikan prinsip keselamatan ke dalam kitaran hayat pembangunan perisian. Ia termasuk keselamatan dalam kejuruteraan keperluan, reka bentuk selamat, analisis risiko, dan membangunkan kod selamat. Pendekatan dalam pengaturcaraan selamat berdasarkan bahasa pengaturcaraan dan pakej perisian yang sesuai dibincangkan.</p> <p><i>This course covers secure software development methodologies and examines strategies to integrate security principles into the software development lifecycle. It includes security in requirements engineering, secure designs, risk analysis, and developing secure code. Approaches in secure programming based on suitable programming language and software packages are discussed.</i></p> |   |               |
| <b>SSW4357</b>   | <b>Pembangunan Aplikasi dalam Pengkomputeran Awan<br/><i>Application Development in Cloud Computing</i></b> | <b>3(3+0)</b> |
| <p>Prasyarat: CCS3101 &amp; CND3200</p> <p>Kursus ini mengandungi konsep, prinsip dan teknologi berkaitan pengkomputeran awan. Ini termasuklah model seni bina pengkomputeran awan dan pembangunan aplikasi menggunakan paradigma pengkomputeran awan. Kursus ini juga merangkumi pelbagai perkhidmatan pengkomputeran awan dan pelantar untuk membangun dan mengatur aplikasi dalam persekitaran awan.</p> <p><i>This course encompasses concept, principles and technologies related to cloud computing. This includes different architectural models of cloud computing and its applications development using the cloud computing paradigm. The course also covers different cloud computing services and platforms to develop and deploy application on cloud environment.</i></p>  |   |               |
| <b>SSW4401</b>   | <b>Perdagangan Elektronik<br/><i>Electronic Commerce</i></b>  | <b>3(3+0)</b> |
| <p>Prasyarat: SSW3308</p> <p>Kursus ini merangkumi konsep dan falsafah perdagangan elektronik. Teknologi yang digunakan dalam ekonomi digital yang meliputi sistem pembayaran elektronik, perbankan elektronik dan penerbitan digital dibincangkan. Pembangunan aplikasi dan penggunaan teknologi dalam perniagaan diberi penekanan.</p> <p><i>This course covers the concepts and philosophy of electronic commerce. Technologies used in the digital economy which includes electronic payment system, electronic banking, and digital publishing are discussed. Application development and technology utilization in business are emphasized.</i></p>  |   |               |



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| <b>SSW4901</b> | <b>Latihan Industri<br/>Industrial Training</b> | <b>12(0+12)</b> |
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Prasyarat: Dengan Kebenaran Jabatan

Melalui kursus ini, pelajar didedahkan kepada persekitaran kerja yang sebenar di industri/organisasi. Latihan merangkumi aplikasi aspek teori dan praktikal yang telah dipelajari dengan amalan semasa di tempat kerja. Kemahiran menyelesaikan masalah dan komunikasi turut diberi penekanan.

*In this course, students are exposed to real working environment in industries/organizations. Training includes application of the theoretical and practical aspects that have been studied with current practices in the workplace. Problem solving and communication skills are also emphasized.*

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| <b>SSW4949</b> | <b>Projek Bachelor<br/>Bachelor Project</b> | <b>6(0+6)</b> |
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Prasyarat: Dengan Kebenaran Jabatan

Kursus ini merangkumi aspek perancangan dan pelaksanaan projek. Ini termasuklah pemilihan tajuk, melaksanakan kajian kritis, mereka bentuk dan melaksanakan strategi kerja, mengumpul dan menganalisis data, serta mendokumentasi dan membentangkan hasil projek.

*This course covers the aspects of planning and executing project. These include title selection, conducting critical review, designing and performing work strategy, collecting and analysing data, documenting and presenting project output.*

## **KURSUS TAWARAN FAKULTI LAIN | OFFERED COURSES BY OTHER FACULTY**

(Sila rujuk sinopsis pada fakulti berkenaan | *Please refer to the synopsis of the relevant faculty*)

### **1. FAKULTI EKOLOGI MANUSIA | FACULTY OF HUMAN ECOLOGY**

|     |           |  |        |
|-----|-----------|--|--------|
| 1.1 | SKP2101*  | Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>   | 3(3+0) |
| 1.2 | FEM2313   | Integriti dan Antirasuah / <i>Integrity and Anti-corruption</i>  | 1(1+0) |
| 1.3 | FEM2401** | Politik Malaysia Dan Masyarakat/ <i>Malaysian Politics and Society</i>                                     | 2(2+0) |
| 1.4 | SKP3112*  | Falsafah dan Isu Semasa/ <i>Philosophy and Current Issues</i>  | 2(2+0) |
| 1.5 | SKP3113** | Falsafah dan Isu Semasa Masyarakat Sipil/ <i>Philosophy and Current Issues in Civil Society</i>            | 3(3+0) |
| 1.6 | SKP3123** | Penghayatan Etika dan Peradaban di Malaysia/ <i>Internalization of Ethics and Civilization in Malaysia</i> | 3(3+0) |
| 1.7 | SKP3122*  | Penghayatan Etika dan Peradaban/ <i>Internalization of Ethics and Civilization</i>                         | 2(2+0) |

**Nota/Note:** \*Pelajar Tempatan/Local Student \*\*Pelajar Antarabangsa/ International Student

### **2. PUSAT PEMAJUAN KOMPETENSI BAHASA | CENTRE FOR THE ADVANCEMENT OF LANGUAGE COMPETENCE**

|     |         |  |        |
|-----|---------|--|--------|
| 2.1 | LPE2403 | Interaksi dan Pembentangan Akademik / <i>Academic Interaction and Presentation</i> | 3(3+0) |
| 2.2 | LPE2503 | Penulisan Akademik / <i>Academic Writing</i>                                       | 3(3+0) |
| 2.3 | LPE2504 | Kemahiran Penulisan Kreatif / <i>Creative Writing Skills</i>                       | 3(3+0) |
| 2.4 | LPE2302 | Pembacaan Bagi Tujuan Akademik / <i>Reading for Academic Purposes</i>              | 3(3+0) |
| 2.5 | LPE2303 | Kemahiran Pembacaan Kritis / <i>Critical Reading Skills</i>                        | 3(3+0) |
| 2.6 | LPM2100 | Bahasa Melayu Komunikasi   | 2(2+0) |

### **3. FAKULTI PERTANIAN | FACULTY OF AGRICULTURE**

|     |         |  |        |
|-----|---------|--|--------|
| 3.1 | PRT2009 | Pertanian dan Kehidupan/ <i>Agriculture and Life</i> | 2(1+1) |
|-----|---------|--|--------|



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