



**UNIVERSITI KEBANGSAAN MALAYSIA**

*The National University of Malaysia*

**DOKTOR PAKAR ORTOPEDIK & TRAUMATOLOGI**  
***DOCTOR OF ORTHOPAEDICS & TRAUMATOLOGY***  
**(DR. ORTO. & TRAUMA, UKM)**  
***(DR. ORTHO. & TRAUMA, UKM)***

**PANDUAN UNTUK PELATIH**  
***A GUIDE FOR TRAINEES***  
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**JABATAN ORTOPEDIK & TRAUMATOLOGI**  
***DEPARTMENT OF ORTHOPAEDICS & TRAUMATOLOGY***  
**FAKULTI PERUBATAN**  
***FACULTY OF MEDICINE***  
**UNIVERSITI KEBANGSAAN MALAYSIA (UKM)**  
***UNIVERSITI KEBANGSAAN MALAYSIA (UKM)***

**1. Doktor Pakar Ortopedik & Traumatologi*****Doctor of Orthopaedics & Traumatology***

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# 1.DOKTOR PAKAR ORTOPEDIK & TRAUMATOLOGI

## DOCTOR OF ORTHOPAEDICS & TRAUMATOLOGY

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#### INTRODUCTION

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| <p><b>KOD PENDIDIKAN<br/>KEBANGSAAN</b></p> <p><i>NATIONAL EDUCATION CODE<br/>(NEC)</i></p>                                  | <p><b>0912 (Perubatan)</b><br/><i>0912 (Medicine)</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                                    |                                                     |                                 |                                       |                                        |                                  |   |   |
| <p><b>MOD PENAWARAN</b></p> <p><i>MODE OF STUDY</i></p>                                                                      | <p><b>Mod Kerja Kursus</b><br/><i>Coursework Mode</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                                    |                                                     |                                 |                                       |                                        |                                  |   |   |
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| <b>Kaedah<br/>Pengajian</b><br><i>Methods of<br/>Study</i>                                                                   | <b>Tempoh<br/>Minimum</b><br><i>Minimum Period</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Tempoh<br/>Maksimum</b><br><i>Maximum period</i>        |                                                    |                                                     |                                 |                                       |                                        |                                  |   |   |
| Sepenuh Masa<br><i>Fulltime</i>                                                                                              | 4 tahun / 4 years<br><br>(8 semester)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 7 tahun / 7 years<br><br>(14 semester)                     |                                                    |                                                     |                                 |                                       |                                        |                                  |   |   |
| Separuh Masa<br><i>Part time</i>                                                                                             | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -                                                          |                                                    |                                                     |                                 |                                       |                                        |                                  |   |   |

Fakulti Perubatan, Universiti Kebangsaan Malaysia (UKM) merupakan yang pertama di Malaysia memulakan program pascasiswazah dalam bidang perubatan [kecuali untuk Ijazah Sarjana Kesihatan Awam (MPH) yang sudah wujud di Universiti Malaya (UM)]; ini bermula dengan Pembedahan Ortopedik dan Pembedahan Am pada bulan Jun 1981. Semua ini adalah hasil usaha Allahyarham Prof QM Iqbal (Pembedahan Ortopedik) dan Allahyarham Prof Sir Harry Annanamuntodo (Jabatan Surgeri).

*The Medical Faculty, Universiti Kebangsaan Malaysia (UKM) was the first in Malaysia to initiate the postgraduate programme in the medical field [except for Masters in Public Health (MPH) which was already in existence at the University of Malaya (UM)]; this began with Orthopaedic Surgery and General Surgery in June 1981. These were credited to the efforts of the late Prof QM Iqbal (Orthopaedic Surgery) and the late Prof Sir Harry Annanamuntodo (Dept of Surgery).*

Program pascasiswazah dalam Pembedahan Ortopedik bermula dengan pengambilan 3 pensyarah ortopedik sebagai calon latihan, kesemuanya tamat pengajian pada tahun 1986. Program ini berbentuk sistem tertutup, latihan dalam perkhidmatan yang terstruktur di mana calon diajar dan dilatih dalam Jabatan Ortopedik dan Traumatologi, UKM dan Hospital Besar Kuala Lumpur (1981 – 1997) dan kemudian di Pusat Perubatan UKM (mulai 1998).

*The postgraduate programme in Orthopaedic Surgery started with the intake of 3 trainee Orthopaedic lecturers as candidates, all of whom graduated in 1986. The programme was in the form of a closed system, structured in-service training where candidates were taught and trained within the Department of Orthopaedics and Traumatology, UKM and the General Hospital, Kuala Lumpur (1981 – 1997) and later UKM Medical Centre (from 1998).*

Selepas perbincangan dengan Kementerian Kesihatan (KKM), Malaysia yang menjadi pemegang taruh utama, Sistem Terbuka telah dimulakan pada Jun 1986 dengan pengambilan seramai 21 calon (16 daripada KKM dan selebihnya daripada Universiti). Sistem Terbuka melibatkan calon-calon daripada KKM, di mana mereka diajar dan dilatih dalam 2 tahun pertama di hospital-hospital KKM yang diakreditasi oleh Universiti (kemudian oleh Lembaga Bersama Ortopedik); tahun ketiga di Hospital Besar Kuala Lumpur (kini dikenali sebagai Hospital Kuala Lumpur) dan tahun keempat (tahun terakhir) di Jabatan Ortopedik dan Traumatologi, UKM.

*After discussions with the Ministry of Health (MOH), Malaysia who became the major stakeholders, the Open System was started in June 1986 with an intake of 21 candidates (16 from MOH and the rest from the Universities). The Open System involves candidates from MOH, where they were taught and trained in the initial 2 years in MOH hospitals accredited by the University (later by the Conjoint Board of Orthopaedics); the 3rd year in General Hospital, Kuala Lumpur (now known as Hospital Kuala Lumpur) and the 4th (final) year in the Department of Orthopaedics and Traumatology, UKM.*

Keperluan untuk lebih ramai pakar bedah ortopedik dari KKM, Malaysia mencapai kemuncaknya dengan pengambilan paling ramai pada Jun 1997 (23 calon). Pada Jun 1995, calon wanita pertama dari KKM diterima masuk ke dalam program tersebut dan beliau tamat pengajian pada Mei 1999.

*The need for more Orthopaedic surgeons from the MOH, Malaysia culminated in the largest intake in June 1997 (23 candidates). In June 1995, the first lady candidate from MOH was accepted into the programme and she graduated in May 1999.*

Program pascasiswazah Ortopedik kemudian berkembang lagi dengan pengambilan pertama calon antarabangsa pada Jun 2003 (1 dari Sudan dan seorang lagi dari Indonesia). Sehingga Jun 2009, terdapat 22 calon antarabangsa, majoritinya dari Iran manakala selebihnya dari Sudan, Libya, Yaman, Indonesia, Brunei, India, Timor Leste, Maldives dan Somalia. Kesemua calon antarabangsa dilatih di bawah Sistem Tertutup di mana mereka ditempatkan di Jabatan Ortopedik dan Traumatologi, UKM.

*The Orthopaedic postgraduate programme then expanded further with the first intake of international candidates in June 2003 (1 from Sudan and another from Indonesia). As of June 2009, there are 22 international candidates, the majority of whom are from Iran with the rest from Sudan, Libya, Yemen, Indonesia, Brunei, India, Timor Leste, Maldives and Somalia. All international candidates are trained under the Closed System whereby they are attached to the Department of Orthopaedics and Traumatology, UKM.*

Tahun 2003 juga menyaksikan penggabungan jabatan ortopedik dari 3 universiti utama di Malaysia [UKM, UM dan USM (Universiti Sains Malaysia)], KKM dan Akademi Perubatan Malaysia (AMM) untuk menubuhkan Jawatankuasa Kepakaran Ortopedik di bawah payung Lembaga Bersama Kebangsaan untuk pengajian pascasiswazah. Jawatankuasa Kepakaran Ortopedik (JKO) yang dahulunya dikenali sebagai Lembaga Bersama Ortopedik (LBO). Kini, keahlian JKO terdiri daripada UKM, UM, USM, IIUM, UNIMAS, UPM, KPJ, UiTM, KKM & AMM. Peperiksaan Akhir kini diadakan sebagai peperiksaan lembaga kebangsaan dalam bidang Ortopedik yang melibatkan semua universiti yang disebutkan tadi. Setakat Mei 2025, bilangan pelajar yang berjaya menamatkan pengajian ialah seramai 470 orang yang telah dihasilkan oleh Jabatan Ortopedik & Traumatologi, Fakulti Perubatan, UKM.

*The year 2003 also witnessed the coming together of the Orthopaedic departments of the 3 major universities in Malaysia [UKM, UM and USM (Universiti Sains Malaysia)], the MOH and the Academy of Medicine (AMM) to form the Orthopaedic Specialty Committee under the umbrella of the National Conjoint Board for postgraduate studies. Orthopaedic Specialty Committee (OSC) formerly known as Conjoint Board of Orthopaedics (CBO). Currently, OSC membership consists of UKM, UM, USM, IIUM, UNIMAS, UPM, KPJ, UiTM, MOH & AMM. The Exit Examinations are now held as a national board examination in Orthopaedics involving all the universities mentioned earlier. Currently, the number of successfully graduated students is 470 as of May 2025, which has been produced by Department of Orthopaedics & Traumatology, Faculty of Medicine, UKM.*

## 1.2 OBJEKTIF KURSUS COURSE OBJECTIVES

Pada akhir kursus, calon latihan dijangka telah memperoleh pengetahuan yang mencukupi, kemahiran peribadi yang baik, kemahiran keusahawanan, etika, dan profesionalisme dalam bidang latihan dan penyelidikan Ortopedik dan Traumatologi serta kemahiran pembedahan untuk menjadi Pakar Bedah Ortopedik yang selamat dan kompeten yang mampu mengamalkan pada tahap Pakar Ortopedik tahun pertama di hospital umum di Malaysia.

*At the end of the course, the trainee is expected to have acquired sufficient knowledge, good personal skills, entrepreneurial skills, ethics, and professionalism in the field of Orthopaedics and Traumatology training and research as well as surgical skills to be a safe and competent Orthopaedic Surgeon able to practice at the level of a first-year Orthopaedic Specialist in a general hospital in Malaysia.*

### Jadual 1: Objektif Pendidikan Program (OPP)

Table 1: Program Educational Objectives (PEO)

|             |                                                                                                                                                       |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OPP1</b> | Mengaplikasikan pengetahuan teori dan klinikal bersama-sama kemahiran digital dan numerikal untuk menambah baik kaedah penjagaan dan rawatan pesakit. |
| <b>PEO1</b> | <i>Applying theoretical and clinical knowledge together with digital and numerical skills to improve patient care and treatment methods.</i>          |
| <b>OPP2</b> | Menunjukkan kepimpinan yang autonomi dan bertanggungjawab, berkomunikasi dan berinteraksi secara berkesan dengan pihak berkepentingan.                |
| <b>PEO2</b> | <i>Demonstrate autonomous and accountable leadership, communicate and interact effectively with stakeholders.</i>                                     |
| <b>OPP3</b> | Menunjukkan kualiti peribadi dan profesional yang cemerlang sepanjang hayat dengan minda keusahawanan untuk mencapai kerjaya yang berjaya.            |
| <b>PEO3</b> | <i>Demonstrate outstanding personal and professional qualities throughout life with an entrepreneurial mindset to achieve a successful career.</i>    |
| <b>OPP4</b> | Mempamerkan tingkah-laku yang beretika, profesional di tempat kerja.                                                                                  |
| <b>PEO4</b> | <i>Demonstrate ethical and professional conduct in the workplace.</i>                                                                                 |

### Jadual 2: Hasil Pembelajaran Program (HPP)

Table 2: Programme Learning Outcomes (PLO)

|             |                                                                                                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HPP1</b> | Menunjukkan pemahaman menyeluruh dalam bidang Ortopedik dan Traumatologi dalam perubatan pesakit.                                                                                           |
| <b>PLO1</b> | <i>Demonstrate comprehensive understanding in the field of Orthopaedics and Traumatology in patient medicine.</i>                                                                           |
| <b>HPP2</b> | Mengaplikasikan pengetahuan berdasarkan pendekatan saintifik dalam bidang Ortopedik dan Traumatologi serta menggunakan pemikiran kritikal dalam membuat keputusan terhadap rawatan pesakit. |
| <b>PLO2</b> | <i>Apply scientific knowledge in the field of Orthopaedics and Traumatology and use critical thinking in making decisions regarding patient treatment.</i>                                  |

|              |                                                                                                                                                     |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HPP3</b>  | Melaksanakan prosedur klinikal berdasarkan kepada operasi standard yang bersesuaian.                                                                |
| <b>PLO3</b>  | <i>Perform clinical procedures in accordance with appropriate standard operating procedures.</i>                                                    |
| <b>HPP4</b>  | Mempamerkan kebolehan berinteraksi & bekerjasama dengan berkesan bersama pasukan profesional kesihatan yang pelbagai.                               |
| <b>PLO4</b>  | <i>Demonstrate the ability to interact and collaborate effectively with diverse professional healthcare teams.</i>                                  |
| <b>HPP5</b>  | Mempamerkan kebolehan memberi nasihat dengan efektif secara lisan dan bertulis.                                                                     |
| <b>PLO5</b>  | <i>Demonstrate the ability to provide advice effectively, both orally and in writing.</i>                                                           |
| <b>HPP6</b>  | Mempamerkan kecekapan menggunakan teknologi digital dalam bidang Ortopedik & Traumatologi.                                                          |
| <b>PLO6</b>  | <i>Demonstrate proficiency in using digital technologies in the field of Orthopaedics and Traumatology.</i>                                         |
| <b>HPP7</b>  | Menggunakan kemahiran numerikal dalam penyelidikan serta perawatan pesakit untuk meningkatkan pengetahuan di dalam bidang Ortopedik & Traumatologi. |
| <b>PLO7</b>  | <i>Apply numerical skills in research and patient care to enhance knowledge in Orthopaedics and Traumatology.</i>                                   |
| <b>HPP8</b>  | Mempamerkan kualiti kepimpinan yang berupaya membuat keputusan dalam situasi kompleks.                                                              |
| <b>PLO8</b>  | <i>Demonstrate leadership qualities and the ability to make decisions in complex situations.</i>                                                    |
| <b>HPP9</b>  | Mempamerkan kemahiran pengurusan diri yang berkesan dalam kerjaya profesional.                                                                      |
| <b>PLO9</b>  | <i>Demonstrate effective personal skills management in a professional career</i>                                                                    |
| <b>HPP10</b> | Mempamerkan sifat berinovasi & minda keusahawanan dalam bidang Ortopedik & Traumatologi.                                                            |
| <b>PLO10</b> | <i>Demonstrate innovation and an entrepreneurial mindset in the field of Orthopaedics and Traumatology.</i>                                         |
| <b>HPP11</b> | Mempamerkan etika perubatan dan bertindak secara professional sepanjang proses rawatan pesakit                                                      |
| <b>PLO11</b> | <i>Demonstrate medical ethics and act professionally throughout the patient treatment process.</i>                                                  |

**Jadual 3: Matriks HPP terhadap OPP**

*Table 3: Matrix of PLO against the PEO*

| <b>Hasil Pembelajaran Program (HPP)</b><br><i>Programme Learning Outcomes (PLO)</i>                                                                                                                                                                                                                                                                                               | <b>Objektif Pendidikan Program (OPP)</b><br><i>Program Educational Objectives (PEO)</i>                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                   | <b>OPP1</b><br>Mengaplikasikan pengetahuan teori dan klinikal bersama-sama kemahiran digital dan numerikal untuk menambah baik kaedah penjagaan dan rawatan pesakit.<br><br><b>PEO1</b><br><i>Applying theoretical and clinical knowledge together with digital and numerical skills to improve patient care and treatment methods.</i> | <b>OPP2</b><br>Menunjukkan kepimpinan yang autonomi dan bertanggungjawab, berkomunikasi dan berinteraksi secara berkesan dengan pihak berkepentingan.<br><br><b>PEO2</b><br><i>Demonstrate autonomous and accountable leadership, communicate and interact effectively with stakeholders.</i> | <b>OPP3</b><br>Menunjukkan kualiti peribadi dan profesional yang cemerlang sepanjang hayat dengan minda keusahawanan untuk mencapai kerjaya yang berjaya.<br><br><b>PEO3</b><br><i>Demonstrate outstanding personal and professional qualities throughout life with an entrepreneurial mindset to achieve a successful career.</i> | <b>OPP4</b><br>Mempamerkan tingkahlaku yang beretika, profesional di tempat kerja.<br><br><b>PEO4</b><br><i>Demonstrate ethical and professional conduct in the workplace.</i> |
| <b>HPP1</b> Menunjukkan pemahaman menyeluruh dalam bidang Ortopedik dan Traumatologi dalam perubatan pesakit.<br><b>PLO1</b> <i>Demonstrate comprehensive understanding in the field of Orthopaedics and Traumatology in patient medicine.</i>                                                                                                                                    | √                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                |
| <b>HPP2</b> Mengaplikasikan pengetahuan berdasarkan pendekatan saintifik dalam bidang Ortopedik dan Traumatologi serta menggunakan pemikiran kritikal dalam membuat keputusan terhadap rawatan pesakit.<br><b>PLO2</b> <i>Apply scientific knowledge in the field of Orthopaedics and Traumatology and use critical thinking in making decisions regarding patient treatment.</i> | √                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                |
| <b>HPP3</b> Melaksanakan prosedur klinikal berdasarkan kepada operasi standard yang bersesuaian.<br><b>PLO3</b> <i>Perform clinical procedures in accordance with appropriate standard operating procedures.</i>                                                                                                                                                                  | √                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                |
| <b>HPP4</b> Mempamerkan kebolehan berinteraksi & bekerjasama dengan berkesan bersama pasukan profesional kesihatan yang pelbagai.<br><b>PLO4</b> <i>Demonstrate the ability to interact and collaborate effectively with diverse professional healthcare teams.</i>                                                                                                               |                                                                                                                                                                                                                                                                                                                                         | √                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                |
| <b>HPP5</b> Mempamerkan kebolehan memberi nasihat dengan efektif secara lisan dan bertulis.<br><b>PLO5</b> <i>Demonstrate the ability to provide advice effectively, both orally and in writing.</i>                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                         | √                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                |

|                                                                                                                                                                                                                                                                                                                 |   |   |   |   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| <p><b>HPP6</b> Mempamerkan kecekapan menggunakan teknologi digital dalam bidang Ortopedik &amp; Traumatologi.</p> <p><b>PLO6</b> <i>Demonstrate proficiency in using digital technologies in the field of Orthopaedics and Traumatology.</i></p>                                                                | √ |   |   |   |
| <p><b>HPP7</b> Menggunakan kemahiran numerikal dalam penyelidikan serta perawatan pesakit untuk meningkatkan pengetahuan di dalam bidang Ortopedik &amp; Traumatologi.</p> <p><b>PLO7</b> <i>Apply numerical skills in research and patient care to enhance knowledge in Orthopaedics and Traumatology.</i></p> | √ |   |   |   |
| <p><b>HPP8</b> Mempamerkan kualiti kepimpinan yang berupaya membuat keputusan dalam situasi kompleks.</p> <p><b>PLO8</b> <i>Demonstrate leadership qualities and the ability to make decisions in complex situations.</i></p>                                                                                   |   | √ |   |   |
| <p><b>HPP9</b> Mempamerkan kemahiran pengurusan diri yang berkesan dalam kerjaya profesional.</p> <p><b>PLO9</b> <i>Demonstrate effective personal skills management in a professional career</i></p>                                                                                                           |   |   | √ |   |
| <p><b>HPP10</b> Mempamerkan sifat berinovasi &amp; minda keusahawanan dalam bidang Ortopedik &amp; Traumatologi.</p> <p><b>PLO10</b> <i>Demonstrate innovation and an entrepreneurial mindset in the field of Orthopaedics and Traumatology.</i></p>                                                            |   |   | √ |   |
| <p><b>HPP11</b> Mempamerkan etika perubatan dan bertindak secara professional sepanjang proses rawatan pesakit</p> <p><b>PLO11</b> <i>Demonstrate medical ethics and act professionally throughout the patient treatment process.</i></p>                                                                       |   |   |   | √ |

## 1.3 STRUKTUR & FORMAT KURSUS

### 1.3 COURSE STRUCTURE & FORMAT

Ini adalah program latihan dalam perkhidmatan selama **4 tahun (8 semester)**. **Mod pengajian** adalah **kerja kursus** yang melibatkan pendekatan berstruktur dan berperingkat untuk memperoleh pengetahuan dan kemahiran pembedahan. Pengajaran dan peperiksaan dijalankan dalam bahasa Inggeris. **Tempoh maksimum** program ini adalah **7 tahun**.

*This is a **4 Years (8 Semesters)**. The mode of study is coursework, which involves a structured, stepwise approach to acquiring surgical knowledge and skills. Teaching and examinations are conducted in English. The **maximum duration** of this programme is **7 years**.*

Latihan dalam perkhidmatan memerlukan calon untuk melaksanakan semua tugas yang diperlukan daripada pegawai perubatan dalam bidang Ortopedik, termasuk menjalankan tanggungjawab di wad, mengendalikan klinik pesakit luar, melakukan atau membantu dalam pembedahan dan menjalankan tugas panggilan.

*In-service training requires the trainee to perform all duties required of a medical officer in Orthopaedics which include carrying out ward responsibilities, running outpatient clinics, performing or assisting in surgery and carrying out call duties.*



**KOD KURSUS  
COURSE CODE**

**KOD TERAS (WF) FFF1SA09  
CORE CODE (WF) FFF1SA09**

| <b>TAHUN 1<br/>YEAR 1</b> |                                                                                                                                                               |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Semester I</b>         |                                                                                                                                                               |
| <b>FFFD6116</b>           | <b>PRINSIP-PRINSIP ORTOPEDIK &amp; TRAUMATOLOGI I</b><br><i>PRINCIPLES OF ORTHOPAEDIC &amp; TRAUMATOLOGY I</i>                                                |
| <b>FFFD6216</b>           | <b>KLINIKAL ORTOPEDIK &amp; TRAUMATOLOGI I</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL I</i>                                                            |
| <b>FFFD6312</b>           | <b>PENYELIDIKAN (ORTOPEDIK &amp; TRAUMATOLOGI) I: SOROTAN KAJIAN</b><br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) I: LITERATURE REVIEW</i>                 |
| <b>FFFQ6611</b>           | <b>PEMBANGUNAN PERSONAL &amp; PROFESIONAL I</b><br><i>PROFESSIONAL &amp; PERSONAL DEVELOPMENT I</i>                                                           |
| <b>Semester II</b>        |                                                                                                                                                               |
| <b>FFFD6126</b>           | <b>PRINSIP-PRINSIP ORTOPEDIK &amp; TRAUMATOLOGI II</b><br><i>PRINCIPLES OF ORTHOPAEDIC &amp; TRAUMATOLOGY II</i>                                              |
| <b>FFFD6226</b>           | <b>KLINIKAL ORTOPEDIK &amp; TRAUMATOLOGI II</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL II</i>                                                          |
| <b>FFFD6322</b>           | <b>PENYELIDIKAN (ORTOPEDIK &amp; TRAUMATOLOGI) II: PEMBENTANGAN PROPOSAL</b><br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) II: PROPOSAL PRESENTATION</i>    |
| <b>FFFQ6621</b>           | <b>PEMBANGUNAN PERSONAL &amp; PROFESIONAL II</b><br><i>PROFESSIONAL &amp; PERSONAL DEVELOPMENT II</i>                                                         |
| <b>TAHUN 2<br/>YEAR 2</b> |                                                                                                                                                               |
| <b>Semester I</b>         |                                                                                                                                                               |
| <b>FFFD6136</b>           | <b>PRINSIP-PRINSIP ORTOPEDIK &amp; TRAUMATOLOGI III</b><br><i>PRINCIPLES OF ORTHOPAEDIC &amp; TRAUMATOLOGY III</i>                                            |
| <b>FFFD6236</b>           | <b>KLINIKAL ORTOPEDIK &amp; TRAUMATOLOGI III</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL III</i>                                                        |
| <b>FFFD6332</b>           | <b>PENYELIDIKAN (ORTOPEDIK &amp; TRAUMATOLOGI) III: KELULUSAN JK ETIKA</b><br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) III: ETHICS COMMITTEE APPROVAL</i> |
| <b>FFFD6436</b>           | <b>PEMBEDAHAN ORTOPEDIK &amp; TRAUMATOLOGI I</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY SURGERY I</i>                                                           |
| <b>FFFQ6631</b>           | <b>PEMBANGUNAN PERSONAL &amp; PROFESIONAL III</b><br><i>PERSONAL AND PROFESSIONAL DEVELOPMENT III</i>                                                         |
| <b>Semester II</b>        |                                                                                                                                                               |
| <b>FFFD6146</b>           | <b>PRINSIP-PRINSIP ORTOPEDIK &amp; TRAUMATOLOGI IV</b><br><i>PRINCIPLES OF ORTHOPAEDIC &amp; TRAUMATOLOGY IV</i>                                              |
| <b>FFFD6246</b>           | <b>KLINIKAL ORTOPEDIK &amp; TRAUMATOLOGI IV</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL IV</i>                                                          |
| <b>FFFD6342</b>           | <b>PENYELIDIKAN (ORTOPEDIK &amp; TRAUMATOLOGI) IV: PENGUMPULAN DATA I</b><br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) IV: DATA COLLECTION I</i>           |
| <b>FFFD6446</b>           | <b>PEMBEDAHAN ORTOPEDIK &amp; TRAUMATOLOGI II</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY SURGERY II</i>                                                         |
| <b>FFFQ6641</b>           | <b>PEMBANGUNAN PERSONAL &amp; PROFESIONAL IV</b><br><i>PERSONAL AND PROFESSIONAL DEVELOPMENT IV</i>                                                           |
| <b>TAHUN 3<br/>YEAR 3</b> |                                                                                                                                                               |
| <b>Semester I</b>         |                                                                                                                                                               |
| <b>FFFD6256</b>           | <b>KLINIKAL ORTOPEDIK &amp; TRAUMATOLOGI V</b><br><i>ORTHOPAEDICS &amp; TRAUMATOLOGY CLINICAL V</i>                                                           |
| <b>FFFD6352</b>           | <b>PENYELIDIKAN (ORTOPEDIK &amp; TRAUMATOLOGI) V: PENGUMPULAN DATA II</b><br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) V: DATA COLLECTION II</i>           |
| <b>FFFD6456</b>           | <b>PEMBEDAHAN ORTOPEDIK &amp; TRAUMATOLOGI III</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY SURGERY III</i>                                                       |
| <b>FFFQ6651</b>           | <b>PEMBANGUNAN PERSONAL &amp; PROFESIONAL V</b><br><i>PERSONAL AND PROFESSIONAL DEVELOPMENT V</i>                                                             |

|                    |                                                                                                                                                                                                                |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Semester II</b> |                                                                                                                                                                                                                |
| <b>FFFD6266</b>    | <b>KLINIKAL ORTOPEDIK &amp; TRAUMATOLOGI VI</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL VI</i>                                                                                                           |
| <b>FFFD6362</b>    | <b>PENYELIDIKAN (ORTOPEDIK &amp; TRAUMATOLOGI) VI: PENGANALISAAN DATA</b><br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) VI: DATA ANALYSIS</i>                                                                |
| <b>FFFD6466</b>    | <b>PEMBEDAHAN ORTOPEDIK &amp; TRAUMATOLOGI IV</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY SURGERY IV</i>                                                                                                          |
| <b>FFFQ6661</b>    | <b>PEMBANGUNAN PERSONAL &amp; PROFESIONAL VI</b><br><i>PERSONAL AND PROFESSIONAL DEVELOPMENT VI</i>                                                                                                            |
| <b>TAHUN 4</b>     |                                                                                                                                                                                                                |
| <b>YEAR 4</b>      |                                                                                                                                                                                                                |
| <b>Semester I</b>  |                                                                                                                                                                                                                |
| <b>FFFD6276</b>    | <b>KLINIKAL ORTOPEDIK &amp; TRAUMATOLOGI VII</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL VII</i>                                                                                                         |
| <b>FFFD6372</b>    | <b>PENYELIDIKAN (ORTOPEDIK &amp; TRAUMATOLOGI) VII: PENULISAN DISERTASI</b><br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) VII: DISSERTATION WRITE-UP</i>                                                     |
| <b>FFFD6476</b>    | <b>PEMBEDAHAN ORTOPEDIK &amp; TRAUMATOLOGI V</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY SURGERY V</i>                                                                                                            |
| <b>FFFQ6671</b>    | <b>PEMBANGUNAN PERSONAL &amp; PROFESIONAL VII</b><br><i>PERSONAL AND PROFESSIONAL DEVELOPMENT VII</i>                                                                                                          |
| <b>Semester II</b> |                                                                                                                                                                                                                |
| <b>FFFD6286</b>    | <b>KLINIKAL ORTOPEDIK &amp; TRAUMATOLOGI VIII</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL VIII</i>                                                                                                       |
| <b>FFFD6382</b>    | <b>PENYELIDIKAN (ORTOPEDIK &amp; TRAUMATOLOGI) VIII: PEMBENTANGAN DISERTASI &amp; PENULISAN MANUSKRIP</b><br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) VIII: DISSERTATION PRESENTATION &amp; MANUSCRIPT</i> |
| <b>FFFD6486</b>    | <b>PEMBEDAHAN ORTOPEDIK &amp; TRAUMATOLOGI VI</b><br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY SURGERY VI</i>                                                                                                          |
| <b>FFFQ6681</b>    | <b>PEMBANGUNAN PERSONAL &amp; PROFESIONAL VIII</b><br><i>PERSONAL AND PROFESSIONAL DEVELOPMENT VIII</i>                                                                                                        |

| Tahun<br>Year                                   | Semester 1                                      |                                                                                                                                                    |                                 | Semester 2  |                                                                                                                                                 |                                 |
|-------------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
|                                                 | Kod<br>Code                                     | Kursus<br>Course                                                                                                                                   | Jam<br>Kredit<br>Credit<br>Hour | Kod<br>Code | Kursus<br>Course                                                                                                                                | Jam<br>Kredit<br>Credit<br>Hour |
| 1                                               | FFFD6116                                        | PRINSIP-PRINSIP ORTOPEDIK & TRAUMATOLOGI I<br><i>PRINCIPLES OF ORTHOPAEDIC &amp; TRAUMATOLOGY I</i>                                                | 6                               | FFFD6126    | PRINSIP-PRINSIP ORTOPEDIK & TRAUMATOLOGI II<br><i>PRINCIPLES OF ORTHOPAEDIC &amp; TRAUMATOLOGY II</i>                                           | 6                               |
|                                                 | FFFD6216                                        | KLINIKAL ORTOPEDIK & TRAUMATOLOGI I<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL I</i>                                                            | 6                               | FFFD6226    | KLINIKAL ORTOPEDIK & TRAUMATOLOGI II<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL II</i>                                                       | 6                               |
|                                                 | FFFD6312                                        | PENYELIDIKAN (ORTOPEDIK & TRAUMATOLOGI) I: SOROTAN KAJIAN<br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) I: LITERATURE REVIEW</i>                 | 2                               | FFFD6322    | PENYELIDIKAN (ORTOPEDIK & TRAUMATOLOGI) II: PEMBENTANGAN PROPOSAL<br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) II: PROPOSAL PRESENTATION</i> | 2                               |
|                                                 | FFFQ 6611                                       | PEMBANGUNAN PERSONAL & PROFESIONAL I<br><i>PROFESSIONAL &amp; PERSONAL DEVELOPMENT I</i>                                                           | 1                               | FFFQ6621    | PEMBANGUNAN PERSONAL & PROFESIONAL II<br><i>PROFESSIONAL &amp; PERSONAL DEVELOPMENT II</i>                                                      | 1                               |
|                                                 | <b>Jumlah Jam Kredit<br/>Total Credit Hours</b> |                                                                                                                                                    |                                 | 15          |                                                                                                                                                 |                                 |
| Tahun<br>Year                                   | Semester 1                                      |                                                                                                                                                    |                                 | Semester 2  |                                                                                                                                                 |                                 |
|                                                 | Kod<br>Code                                     | Kursus<br>Course                                                                                                                                   | Jam<br>Kredit<br>Credit<br>Hour | Kod<br>Code | Kursus<br>Course                                                                                                                                | Jam<br>Kredit<br>Credit<br>Hour |
| 2                                               | FFFD6136                                        | PRINSIP-PRINSIP ORTOPEDIK & TRAUMATOLOGI III<br><i>PRINCIPLES OF ORTHOPAEDIC &amp; TRAUMATOLOGY III</i>                                            | 6                               | FFFD6146    | PRINSIP-PRINSIP ORTOPEDIK & TRAUMATOLOGI IV<br><i>PRINCIPLES OF ORTHOPAEDIC &amp; TRAUMATOLOGY IV</i>                                           | 6                               |
|                                                 | FFFD6236                                        | KLINIKAL ORTOPEDIK & TRAUMATOLOGI III<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL III</i>                                                        | 6                               | FFFD6246    | KLINIKAL ORTOPEDIK & TRAUMATOLOGI IV<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL IV</i>                                                       | 6                               |
|                                                 | FFFD6332                                        | PENYELIDIKAN (ORTOPEDIK & TRAUMATOLOGI) III: KELULUSAN JK ETIKA<br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) III: ETHICS COMMITTEE APPROVAL</i> | 2                               | FFFD6342    | PENYELIDIKAN (ORTOPEDIK & TRAUMATOLOGI) IV: PENGUMPULAN DATA I<br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) IV: DATA COLLECTION I</i>        | 2                               |
|                                                 | FFFD6436                                        | PEMBEDAHAN ORTOPEDIK & TRAUMATOLOGI I<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY SURGERY I</i>                                                           | 6                               | FFFD6446    | PEMBEDAHAN ORTOPEDIK & TRAUMATOLOGI II<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY SURGERY II</i>                                                      | 6                               |
|                                                 | FFFQ6631                                        | PEMBANGUNAN PERSONAL & PROFESIONAL III<br><i>PERSONAL AND PROFESSIONAL DEVELOPMENT III</i>                                                         | 1                               | FFFQ6641    | PEMBANGUNAN PERSONAL & PROFESIONAL IV<br><i>PERSONAL AND PROFESSIONAL DEVELOPMENT IV</i>                                                        | 1                               |
| <b>Jumlah Jam Kredit<br/>Total Credit Hours</b> |                                                 |                                                                                                                                                    | 21                              |             |                                                                                                                                                 | 21                              |

| Tahun<br>Year | Semester 1                                      |                                                                                                                                             |                                 | Semester 2  |                                                                                                                                         |                                 |
|---------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
|               | Kod<br>Code                                     | Kursus<br>Course                                                                                                                            | Jam<br>Kredit<br>Credit<br>Hour | Kod<br>Code | Kursus<br>Course                                                                                                                        | Jam<br>Kredit<br>Credit<br>Hour |
| 3             | FFFD6256                                        | KLINIKAL ORTOPEDIK & TRAUMATOLOGI V<br><i>ORTHOPAEDICS &amp; TRAUMATOLOGY CLINICAL V</i>                                                    | 6                               | FFFD6266    | KLINIKAL ORTOPEDIK & TRAUMATOLOGI VI<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL VI</i>                                               | 6                               |
|               | FFFD6352                                        | PENYELIDIKAN (ORTOPEDIK & TRAUMATOLOGI) V:<br>PENGUMPULAN DATA II<br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) V: DATA COLLECTION II</i> | 2                               | FFFD6362    | PENYELIDIKAN (ORTOPEDIK & TRAUMATOLOGI) VI:<br>PENGANALISAAN DATA<br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) VI: DATA ANALYSIS</i> | 2                               |
|               | FFFD6456                                        | PEMBEDAHAN ORTOPEDIK & TRAUMATOLOGI III<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY SURGERY III</i>                                                | 6                               | FFFD6466    | PEMBEDAHAN ORTOPEDIK & TRAUMATOLOGI IV<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY SURGERY IV</i>                                              | 6                               |
|               | FFFQ6651                                        | PEMBANGUNAN PERSONAL & PROFESIONAL V<br><i>PERSONAL AND PROFESSIONAL DEVELOPMENT V</i>                                                      | 1                               | FFFQ6661    | PEMBANGUNAN PERSONAL & PROFESIONAL VI<br><i>PERSONAL AND PROFESSIONAL DEVELOPMENT VI</i>                                                | 1                               |
|               | <b>Jumlah Jam Kredit<br/>Total Credit Hours</b> |                                                                                                                                             | 15                              |             |                                                                                                                                         | 15                              |

| Tahun<br>Year | Semester 1                                      |                                                                                                                                                    |                                 | Semester 2  |                                                                                                                                                                                                    |                                 |
|---------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
|               | Kod<br>Code                                     | Kursus<br>Course                                                                                                                                   | Jam<br>Kredit<br>Credit<br>Hour | Kod<br>Code | Kursus<br>Course                                                                                                                                                                                   | Jam<br>Kredit<br>Credit<br>Hour |
| 4             | FFFD6276                                        | KLINIKAL ORTOPEDIK & TRAUMATOLOGI VII<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL VII</i>                                                        | 6                               | FFFD6286    | KLINIKAL ORTOPEDIK & TRAUMATOLOGI VIII<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY CLINICAL VIII</i>                                                                                                      | 6                               |
|               | FFFD6372                                        | PENYELIDIKAN (ORTOPEDIK & TRAUMATOLOGI) VII:<br>PENULISAN DISERTASI<br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) VII: DISSERTATION WRITE-UP</i> | 2                               | FFFD6382    | PENYELIDIKAN (ORTOPEDIK & TRAUMATOLOGI) VIII:<br>PEMBENTANGAN DISERTASI & PENULISAN MANUSKRIP<br><i>RESEARCH (ORTHOPAEDIC &amp; TRAUMATOLOGY) VIII: DISSERTATION PRESENTATION &amp; MANUSCRIPT</i> | 2                               |
|               | FFFD6476                                        | PEMBEDAHAN ORTOPEDIK & TRAUMATOLOGI V<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY SURGERY V</i>                                                           | 6                               | FFFD6486    | PEMBEDAHAN ORTOPEDIK & TRAUMATOLOGI VI<br><i>ORTHOPAEDIC &amp; TRAUMATOLOGY SURGERY VI</i>                                                                                                         | 6                               |
|               | FFFQ6671                                        | PEMBANGUNAN PERSONAL & PROFESIONAL VII<br><i>PERSONAL AND PROFESSIONAL DEVELOPMENT VII</i>                                                         | 1                               | FFFQ6681    | PEMBANGUNAN PERSONAL & PROFESIONAL VIII<br><i>PERSONAL AND PROFESSIONAL DEVELOPMENT VIII</i>                                                                                                       | 1                               |
|               | <b>Jumlah Jam Kredit<br/>Total Credit Hours</b> |                                                                                                                                                    | 15                              |             |                                                                                                                                                                                                    | 15                              |

|                                                         |            |
|---------------------------------------------------------|------------|
| <b>Jam Kredit Kumulatif<br/>Cumulative Credit Hours</b> | <b>132</b> |
|---------------------------------------------------------|------------|

## **Tahun 1; Fasa Awal – Rotasi Trauma**

### **Year 1; The Early Phase - Trauma Rotation**

Latihan ini direka untuk membina pengetahuan dan kemahiran asas yang telah dipelajari sebelum memasuki program. Penekanan dalam fasa ini adalah terutamanya pada pengurusan Pesakit Trauma. Ini mungkin kali pertama calon latihan akan menghadapi sistem yang kompleks untuk pengurusan pembedahan patah tulang, oleh itu, pengajaran tentang cara penggunaan alat dan implan dengan betul merupakan komponen penting dalam fasa awal latihan kepakaran ini. Terdapat juga jangkaan dan keperluan dalam fasa ini supaya calon membangunkan tahap kemahiran yang tinggi dalam penilaian pesakit dan dapat mengurus dengan cekap, selamat dan kompeten penjagaan awal pesakit yang mengalami kecederaan teruk, sama ada muda atau tua, serta pesakit dengan pelbagai komorbiditi. Rotasi dijalankan dalam blok selama 4 bulan. Pencapaian yang memuaskan dalam penilaian akhir Fasa Awal adalah syarat utama untuk kemajuan ke Fasa Lanjutan.

*Training is designed to build upon the basic knowledge and skills learnt prior to entry. The emphasis in this phase will primarily be in the management of Trauma Patients. This may be the first time that trainees will encounter complex systems for the surgical management of fractures, therefore, instilling the ways of properly using these instruments and implants is an essential component of this early phase of specialty training. There is also an expectation and requirement during this phase that the trainee develops high levels of skills in the assessment of the patients and can competently, safely and efficiently manage the early care of the severely injured, young and old patients and patients with multiple co-morbidities. Rotations conducted in 4-month blocks. Satisfactory achievement in the end of the Early Phase assessments is a key requirement for the progression to the Advanced Phase.*

## **Tahun 2 - Tahun 4: Fasa Lanjutan – Rotasi Sub-Kepakaran**

### **Year 2 – Year 4; The Advanced Phase – Sub-Specialty Rotation**

Latihan Tahun 2 direka untuk melihat kemahiran trauma berkembang dengan lebih lanjut dan calon latihan juga akan mula memperoleh kemahiran dalam bidang Ortopedik elektif. Tiga tahun fasa ini memerlukan calon untuk meningkatkan tahap kemahiran dalam bidang Trauma dan Amalan Ortopedik (T&O) yang diperlukan sebagai seorang pakar yang baru layak bekerja di hospital umum. Tahun terakhir latihan kepakaran (Tahun 4) memerlukan calon menunjukkan bahawa mereka boleh dengan yakin dan selamat mula mengembangkan aspek amalan bebas sambil memastikan keputusan pengurusan pesakit dibincangkan sepenuhnya dan dipersetujui bersama seorang pegawai kanan. Empat bulan terakhir sebelum Peperiksaan Akhir/ Peperiksaan Doktor Ortopedik & Traumatologi (Dr. Ortho. & Trauma UKM) diperuntukkan untuk Elektif atau bagi calon mengulang satu rotasi yang belum diselesaikan dengan memuaskan.

*The Year 2 training is designed to see trauma skills being developed further and the trainee will also begin to gain competence in elective Orthopaedics. The 3 years of this phase require the trainee to develop increasing competence in the areas of Trauma and Orthopaedic (T&O) practice that will be required as a newly qualified specialist in a general hospital. The final year of specialist training (Year 4) will require the trainee to show that they can reliably and safely start to develop aspects of independent practice whilst ensuring that patient management decisions are discussed fully and agreed with a senior. The final 4 months before the Exit Examination/ Doctor of Orthopaedic & Traumatology (Dr. Ortho. & Trauma UKM) Examination) are reserved for Electives or for trainees to repeat one rotation they have not satisfactorily completed.*

**Penilaian Akhir Tahun (EOY)**

**End of Year (EOY)**

Penilaian Akhir Tahun (EOY) tahunan membolehkan kemajuan calon latihan dipantau secara berterusan.

*The annual End of Year (EOY) assessments allow training candidate progress to be monitored.*

Gred penilaian **Memuaskan (S)** dalam semua komponen membolehkan calon latihan meneruskan ke peringkat latihan seterusnya.

*A **Satisfactory (S)** assessment grade in all components allows training candidate to proceed to the next stage of training.*

Calon latihan yang memperoleh gred **Tidak Memuaskan (U)** juga dapat dikenal pasti, dan langkah-langkah pemulihan boleh diambil untuk menyokong pembelajaran mereka.

*Training candidate who obtain an **Unsatisfactory (U)** grade are also identified and remedial steps can then be taken to support their learning.*

Jadual di bawah menunjukkan tempoh penempatan (rotasi) dan masa penilaian dijalankan dalam tempoh latihan selama 4 tahun.

*The table below illustrates the timing of the rotations and when reviews take place in a typical 4-year training period.*

| <b>Rotasi/ Tahun</b><br><i>Rotations/ Year</i> | <b>Rotasi</b><br><i>Rotation</i><br><b>(Bulan 1 – 4)</b><br><i>(Month 1 - 4)</i> | <b>Rotasi</b><br><i>Rotation</i><br><b>(Bulan 5 – 8)</b><br><i>(Month 5 - 8)</i> | <b>Rotasi</b><br><i>Rotation</i><br><b>(Bulan 9 – 12)</b><br><i>(Month 9 - 12)</i> |                                                           | <b>Penilaian Akhir Tahun</b><br><i>Assessment at End of Year (EOY)</i> |
|------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------|
| <b>Tahun 1</b><br><i>Year 1</i>                | Trauma 1                                                                         | Trauma 2                                                                         | Trauma 3                                                                           |                                                           | EOY1                                                                   |
| <b>Tahun 2</b><br><i>Year 2</i>                | Sub 1                                                                            | Sub 2                                                                            | Sub 3                                                                              |                                                           | EOY2                                                                   |
| <b>Tahun 3</b><br><i>Year 3</i>                | Sub 4                                                                            | Sub 5                                                                            | Sub 6                                                                              |                                                           | EOY3                                                                   |
| <b>Tahun 4</b><br><i>Year 4</i>                | Sub 7                                                                            | Sub 8                                                                            | EOY4                                                                               | Elektif<br><i>Electives /</i><br>Ulangan<br><i>Repeat</i> | Peperiksaan Akhir<br><i>Exit Examination</i>                           |

Jadual 4: Rotasi

*Table 4: Rotation*

**Proses Penilaian**

**Review Process**

Program Latihan Pascasiswazah Ortopedik dibahagikan kepada dua belas blok, setiap satu selama empat bulan, menjadikan jumlah keseluruhan latihan selama 48 bulan.

*The Postgraduate Orthopaedic Training Programme is divided into twelve blocks of four months each, totalling 48 months.*

Pada tahun pertama, pelatih menjalani tiga rotasi Trauma Am (General Trauma).  
*In the first year, trainees go through three General Trauma rotations.*

Calon latihan mesti melengkapkan ketiga-tiga rotasi tersebut dengan memuaskan sebelum dibenarkan meneruskan ke Tahun 2.  
*They must complete all three rotations satisfactorily before they can progress to Year 2.*

Bagi Tahun 2 hingga Tahun 4, terdapat lapan (8) rotasi subkepakaran yang dijalankan dalam blok selama 4 bulan, iaitu:  
*For Years 2–4, there are eight subspecialty rotations which are conducted in 4-month blocks, namely:*

Subkepakaran:

*Subspeciality:*

- |                                                                              |                                                                                                                                                                               |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Kecederaan Sukan & Artroskopik<br><i>Sports Injury &amp; Arthroscopic</i> | 6. Artroplasti<br><i>Arthroplasty</i>                                                                                                                                         |
| 2. Kaki & Buku Lali<br><i>Foot &amp; Ankle</i>                               | 7. Onkologi<br><i>Oncology</i>                                                                                                                                                |
| 3. Spinal<br><i>Spine</i>                                                    | 8. Trauma Muskuloskeletal Lanjutan & Pembedahan Pembinaan Semula Memanjangkan Anggota<br><i>Advanced Musculoskeletal Trauma &amp; Limb Lengthening Reconstruction Surgery</i> |
| 4. Pembedahan Tangan & Mikro<br><i>Hand &amp; Microsurgery</i>               |                                                                                                                                                                               |
| 5. Ortopedik Pediatrik<br><i>Paediatric Orthopaedic</i>                      |                                                                                                                                                                               |

Topik yang melibatkan Perubatan Rehabilitasi hendaklah diintegrasikan dalam rotasi yang meliputi modaliti berkaitan dengan rotasi tersebut. (contoh: latihan rantaian tertutup dan terbuka (closed and open chain exercises) dalam rotasi Perubatan Sukan, serta rehabilitasi tendon fleksor dan penggunaan splin khusus dalam rotasi Pembedahan Tangan dan Mikrosurgeri.)

*The topics covered by Rehabilitation Medicine should be integrated within the rotation covering the related modalities with respect to that rotation. (e.g., closed and open chain exercises in the Sports rotation, and flexor tendon rehabilitation and specific splints in the Hand and Microsurgery rotation.)*

Empat (4) bulan terakhir sebelum Peperiksaan Akhir (*Exit Examination*) diperuntukkan untuk Elektif atau untuk calon latihan mengulangi satu rotasi yang belum diselesaikan dengan Memuaskan (S).  
*The final 4 months prior to the Exit Examination is for Electives or for trainees to repeat one rotation which they have not satisfactorily completed.*

**Kriteria untuk Mencapai Gred “S” (Memuaskan)**  
**Criteria for Achieving an “S” (Satisfactory) Grade**

Bagi mencapai gred “S” (Memuaskan) dalam setiap rotasi perlulah memenuhi syarat-syarat berikut.  
*To achieve an “S” (Satisfactory) grade in each rotation, the following conditions must be met.*

**Gred “Memuaskan” (“Satisfactory” Grade);**

1. **Penyelesaian Penilaian Berasaskan Prosedur (Procedure-Based Assessment, PBA)** dengan minimum **tiga (3) PBA** bagi setiap prosedur dalam setiap rotasi, serta mencapai **Tahap Ringkasan Global (Global Summary Level)** yang ditetapkan mengikut rotasi dan peringkat latihan.  
*Completion of Procedure-Based Assessments (PBA) (minimum of three (3) PBAs per procedure per rotation), achieving the Global Summary Level expected for the rotation and stage of training.*
2. **Penyelesaian Mini-Clinical Evaluation Exercise (Mini-CEX)** dengan minimum **tujuh (7) Mini-CEX** bagi setiap rotasi empat (4) bulan, serta mencapai **Tahap Ringkasan Global (Global Summary Level)** yang ditetapkan bagi rotasi tersebut.  
*Completion of Mini-Clinical Evaluation Exercises (Mini-CEX) (minimum of seven (7) Mini-CEX assessments per four (4) month rotation), achieving the expected Global Summary Level for the rotation.*
3. **Penyelesaian Perbincangan Berasaskan Kes (Case-based Discussion, CbD)** dengan minimum **dua (2) CbD** bagi setiap rotasi 4 bulan, serta mencapai **Tahap Ringkasan Global (Global Summary Level)** yang ditetapkan bagi rotasi tersebut.  
*Completion of Case-based Discussions (CbD) (minimum of two (2) CbDs per four (4) month rotation), achieving the expected Global Summary Level for the rotation.*
4. **Buku Log Prosedur Pembedahan (Logbook)** yang sentiasa dikemas kini dan lengkap.  
*An up-to-date and complete Logbook of Operative.*
5. **Laporan Jurulatih/Penyelia Klinikal (Trainer’s Report)** yang memuaskan.  
*A satisfactory Trainer’s Report.*

**Penyelidikan, Audit dan Penambahbaikan Kualiti (RAQI) (Research, Audit, Quality Improvement Initiative, RAQI)** yang memuaskan berdasarkan **Laporan Penyelia (Supervisor’s Report)** adalah diperlukan semasa penilaian **Akhir Tahun (End of Year, EOY)**. Walau bagaimanapun, RAQI bukan sebahagian daripada penilaian pada akhir rotasi dan tidak akan mempengaruhi gred yang diberikan bagi setiap rotasi.

*Satisfactory RAQI progress, as reflected in the Supervisor’s Report, is required during End of Year (EOY) assessments. However, it is not part of the end-of-rotation assessment and will not affect the grading awarded for each rotation.*

Setelah menamatkan kursus dan lulus peperiksaan yang ditetapkan, calon akan dianugerahkan ijazah Doktor Ortopedik & Traumatologi (Dr. Ortho. & Trauma UKM).

*On completion of the course and passing the required examinations, the trainee shall be conferred the degree Doctor of Orthopaedics & Traumatology (Dr. Ortho. & Trauma UKM).*

Ini adalah kelayakan profesional tertinggi yang dianugerahkan oleh Universiti dalam bidang Ortopedik & Traumatologi.

*This is the highest professional qualification awarded by the University in the field of Orthopaedics & Traumatology.*

Setelah memperoleh ijazah Doktor Ortopedik & Traumatologi (Dr. Ortho. & Trauma UKM), calon layak menjalani proses penggazetan diikuti dengan Pendaftaran Pakar Kebangsaan (NSR) supaya diiktiraf sebagai pakar.

*On obtaining the Doctor of Orthopaedics & Traumatology (Dr. Ortho. & Trauma UKM) degree, the trainee is eligible for undergo gazette ment followed by the National Specialist Registration (NSR), process so as to be recognised as specialists.*

## 1.4 SYARAT KEMASUKAN ENTRY REQUIREMENTS

Kriteria untuk Pemohon Malaysia dan Antarabangsa ialah:  
*Criteria for Malaysian and International Applicants are:*

Semua pemohon akan menjalani penilaian lanjut yang terdiri daripada dua bahagian: Peperiksaan Bertulis (WE) dan SPOT. Komponen WE adalah Peperiksaan Pra-Kemasukan Pakar Perubatan (MedEx), yang dijalankan oleh Majlis Dekan Perubatan Malaysia dan Majlis Peperiksaan Malaysia sebelum Pemilihan Latihan Pascasiswazah Ortopedik (SPOT). Hanya pemohon yang lulus WE sahaja boleh meneruskan ke peringkat SPOT. Komponen SPOT dijalankan setiap tahun oleh Jawatankuasa Kepakaran Ortopedik.

*All applicants will undergo further evaluation, consisting of two parts: a Written Examination (WE) and SPOT. The WE component is the Medical Specialist Pre-Entrance Examination (MedEx), conducted by the Medical Deans Council of Malaysia and the Malaysian Examinations Council before the Selection for Postgraduate Orthopaedic Training (SPOT). Only applicants who have passed the WE can progress to the SPOT stage. The SPOT component is conducted annually by the Orthopaedic Specialty Committee.*

1. Memenuhi skor yang ditetapkan dalam Peperiksaan Pra-Kemasukan Pakar Perubatan (MedEx) <https://www.mpm.edu.my/en/medex/background-of-medex> & Pemilihan Latihan Pascasiswazah Ortopedik (SPOT) <https://myorthospot.com/>; & *Fulfil the required score in the Medical Specialist Pre-entrance Examination (MedEx) <https://www.mpm.edu.my/en/medex/background-of-medex> & Selection for Postgraduate Orthopaedic Training (SPOT) <https://myorthospot.com/>; &*
2. Memiliki Ijazah Perubatan daripada Universiti Kebangsaan Malaysia (UKM) atau Ijazah Doktor Perubatan (MD) atau Ijazah Sarjana Muda Perubatan dan Pembedahan (MBBS atau MBBSCh) atau doktor perubatan setara yang diiktiraf oleh Senat dan kerajaan Malaysia; & *Obtaining a Medical Degree from Universiti Kebangsaan Malaysia (UKM) or a Doctor of Medicine (MD) Degree or a Bachelor of Medicine and Bachelor of Surgery (MBBS or MBBSCh) Degree or other equivalent medical doctorate from Universiti Kebangsaan Malaysia (UKM) or recognized by the Senate and the Malaysian government; &*
3. Mempunyai pengalaman klinikal sekurang-kurangnya dua (2) tahun selepas memperoleh ijazah perubatan asas; & *At least two (2) years after clinical experience after basic medical degree; &*
4. Mempunyai pengalaman bekerja selama satu (1) tahun sebagai pegawai perubatan di mana-mana Jabatan Ortopedik & Traumatologi; & *Have one (1) year of experience serving in any Department of Orthopaedic & Traumatology as a medical officer; &*
5. Berbadan sihat dan berumur tidak melebihi 40 tahun pada masa pendaftaran; & *Healthy body and maximum age of 40 years old at the time of registration; &*

6. Berdaftar dengan Majlis Perubatan Malaysia (MMC); &  
*Registered with the Malaysian Medical Council (MMC); &*
7. Telah mengikuti kursus dalam bidang Ortopedik dan kemahiran pembedahan; &  
*Completed courses in Orthopedics and surgical skills; &*
8. Telah melengkapkan kursus Aktiviti Pembelajaran Asas (ELA); &  
*Completed Essential Learning Activities (ELA) course; &*
9. Sedang menjalani Latihan Sangkutan Klinikal (minimum 3/6 bulan) di Fakulti Perubatan, Universiti Kebangsaan Malaysia (UKM) dengan prestasi yang baik; &  
*\*\* (Bagi calon antarabangsa: tertakluk kepada syarat kemasukan lain) Apa-apa syarat khusus lain yang ditetapkan oleh program. (Sila rujuk penyelaras program)*  
*Undergoing Clinical Training (minimum 3/6 months) at the Faculty of Medicine, Universiti Kebangsaan Malaysia UKM with good performance; &*  
*\*\* (For International candidates: subject to other entry requirements) Any other specific requirements required by the program. (Please refer to the program coordinator)*
10. Lulus temuduga; &  
*Passed interview: &*
11. Surat/bukti sokongan kewangan mesti disertakan. Semua pemohon antarabangsa dan pemohon yang membiayai sendiri perlu mengemukakan bukti bertulis status kewangan yang diterima sama ada dalam bentuk penyata bank aktif/institusi kewangan atau surat jaminan; &  
*A letter/evidence of financial support must be attached. All international applicants and self-funded applicants must submit written evidence of acceptable financial status either in the form of an active bank statement/financial institution or a letter of guarantee; &*
12. Semua pengambilan adalah tertakluk kepada syarat dan dasar yang ditetapkan oleh Universiti Kebangsaan Malaysia (UKM).  
*All recruitment will be subject to the conditions and policies set by Universiti Kebangsaan Malaysia (UKM).*

Bagi **calon** dari **luar negara**, syarat-syarat berikut mesti dipenuhi:

*For candidates from abroad, the following requirements must be met:*

1. Berdaftar dengan Majlis Perubatan negara asal dan melampirkan salinan asal "Sijil Kedudukan Baik" (Good Standing Certificate).  
*Registered with the Medical Council of the country of origin and enclose the original copy of the "Good Standing Certificate."*
2. Berdaftar dengan Majlis Perubatan Malaysia (MMC) dan memperoleh pendaftaran sementara.  
*Registered with the MMC and obtained temporary registration.*
3. Calon yang layak mesti mempunyai IELTS  $\geq$  Band 6.5 atau kelayakan setara seperti MUET  $\geq$  Band 4.5 atau TOEFL iBT  $\geq$  79 atau Pearson Test of English  $\geq$  63 atau Kelayakan dan Peperiksaan Bahasa Inggeris Cambridge  $\geq$  176 (beserta bukti), yang diambil dalam tempoh dua tahun sebelum permohonan; &  
*Eligible candidates must have **IELTS  $\geq$  Band 6.5** or any equivalent qualification such as MUET  $\geq$  Band 4.5 or TOEFL iBT  $\geq$  79 or Person Test of English  $\geq$  63 or Cambridge English Qualifications and Test  $\geq$  176 (with proof), taken within the last two years prior to application; &*
4. Tempoh penempatan klinikal selama 3/6 bulan diikuti dengan temuduga sebelum diterima ke dalam program serta mempunyai biasiswa atau jaminan kewangan.  
*A period of clinical attachment of 3/6 months followed by an interview before being accepted into the programme & has a scholarship or financial security.*
5. Wajib bagi semua calon asing mengikuti kursus bahasa Melayu yang dianjurkan oleh universiti. Kursus ini dijalankan selepas waktu pejabat dan tiada pengecualian, termasuk calon dari Indonesia, Brunei dan Singapura.  
*Compulsory for all foreign candidates to take the Malay language course organised by the university. The course is conducted after office hours, and no one is exempted, including candidates from Indonesia, Brunei and Singapore.*

**Syarat Khas:**

**Special Requirements:**

Calon tidak mempunyai masalah mobiliti, pendengaran dan fungsi penglihatan. Calon tidak boleh mempunyai jangkitan retroviral yang diketahui boleh disebarkan semasa prosedur pembedahan menurut Garis Panduan Majlis Perubatan Malaysia (MMC) mengenai Jangkitan Virus yang Dibawa Melalui Darah (<https://mmc.gov.my/wp-content/uploads/2019/11/HIVBlood-Borne-Virus-Infections-MMC-Guideline.pdf>).

Prestasi baik: telah mencapai nilai sasaran program kemasukan.

*No problems in terms of mobility, hearing and visual function. Candidates should not have any known retroviral infections that can be transmitted during surgical procedures according to the Malaysian Medical Council (MMC) Guidelines on Bloodborne Viral Infections (<https://mmc.gov.my/wp-content/uploads/2019/11/HIVBlood-Borne-Virus-Infections-MMC-Guideline.pdf>).*

*\*\*good performance: has achieved the target value of the admission program*

## KAEDAH PERMOHONAN METHOD OF APPLICATION

Calon yang layak (seperti yang ditentukan oleh kriteria di atas) boleh memohon secara dalam talian sama ada melalui KKM (calon yang dibiayai oleh kerajaan-KKM) atau ke universiti pilihan mereka (calon swasta Malaysia dan antarabangsa). Calon yang layak perlu melalui proses pemilihan yang dikenali sebagai Pemilihan Latihan Pascasiswazah Ortopedik (SPOT), dan selepas itu mereka akan dimaklumkan oleh KKM dan universiti masing-masing mengenai keputusan permohonan mereka.

*Eligible candidates (as determined by the criteria above) apply online either through MOH (government-MOH sponsored candidates) or to the university of their choice (private Malaysian and international candidates).*

*Eligible candidates are required to go through a selection process termed Selection for Postgraduate Orthopaedic Training (SPOT), following which they are informed by MOH and the university respectively of the outcome of their application.*

Walau bagaimanapun, anda boleh menjalani latihan klinikal terlebih dahulu selama 3/6 bulan / 1 tahun mengikut keselesaan anda sambil mengambil peperiksaan yang dinyatakan dan MESTI LULUS semua kriteria. Permohonan boleh dibuat melalui JoinUKM (<https://join.ukm.my/>).

*However, you can undergo clinical training first for 3/6 months / 1 year according to your convenience while taking the stated exams and MUST PASS all the criteria. Application can be made through the JoinUKM (<https://join.ukm.my/>)*

## 1.5 GARIS PANDUAN, PERATURAN DAN PEMANTAUAN GUIDELINES, REGULATIONS AND MONITORING

Buku Panduan Program ini hendaklah dibaca bersama dengan peraturan akademik universiti dan fakulti yang sedang berkuat kuasa. Sekiranya terdapat percanggahan, peraturan universiti adalah dirujuk sebagai autoriti utama.

Pelajar adalah bertanggungjawab untuk merujuk dan mematuhi dokumen rasmi berikut (tidak terhad kepada):

- i. Peraturan-peraturan Universiti Kebangsaan Malaysia (Pengajian Sarjana Muda) 2024
- ii. Peraturan-peraturan Universiti Kebangsaan Malaysia (Pengajian Siswazah) 2021
- iii. Garis Panduan Aduan Salah Laku Pengajian Siswazah
- iv. Garis Panduan Penyeliaan Pelajar Siswazah
- v. Panduan Penulisan Tesis Gaya UKM

Dokumen-dokumen ini boleh diakses melalui portal rasmi Pusat Pengurusan Akademik UKM (<https://www.ukm.my/akademik/>), Pusat Pengajian Prasiswazah Fakulti Perubatan (<https://www.ukm.my/sppfper/>), dan Pusat Pengajian Siswazah Fakulti Perubatan (<https://www.ukm.my/spsfper/>) atau saluran komunikasi rasmi lain yang ditetapkan.

**Bermula Disember 2022:**  
**Commencing December 2022:**

1. Setelah memasuki program, penyelia akan dilantik untuk calon latihan.  
*Upon entering the program, supervisors will be appointed for the trainees.*
2. Calon latihan hendaklah berbincang dengan penyelia mengenai tajuk projek penyelidikan untuk disertasi.  
*Trainees shall discuss with their supervisors regarding the topic of the research project for the dissertation.*
3. Calon latihan hendaklah bertemu dengan penyelia secara berkala untuk membincangkan dan melaporkan kemajuan mereka dalam penilaian, disertasi dan penulisan kes.  
(LAMPIRAN IV: PERJANJIAN PEMBELAJARAN DENGAN PENYELIA)  
*Trainees shall meet with their supervisors regularly to discuss and report on their progress on their assessment, dissertation and case write-ups.*  
(ATTACHMENT IV: LEARNING AGREEMENT WITH SUPERVISOR)
4. Calon latihan mesti bertemu dengan Jurulatih mereka pada permulaan setiap rotasi dan jurulatih mesti memberikan penilaian berterusan pada akhir setiap rotasi.  
(LAMPIRAN VI: PERJANJIAN PEMBELAJARAN DENGAN JURULATIH & LAPORAN JURULATIH)  
*Trainees must meet with their Trainer at the beginning of each rotation and the trainer must provide an ongoing assessment at the end of every rotation.*  
(ATTACHMENT VI: LEARNING AGREEMENT WITH TRAINER & TRAINER'S REPORT)
5. Bagi calon latihan yang datang ke HCTM pada tahun ke-3, penyelia dalaman akan dilantik untuk memastikan kesinambungan penyeliaan.  
*For trainees who come to HCTM in the 3<sup>rd</sup> year, internal supervisors shall be appointed to them to ensure continuity of supervision.*
6. Disertasi dan penulisan kes hendaklah diterima sebagai memuaskan oleh penyelia sebelum diserahkan 6 bulan sebelum Peperiksaan / Doktor Ortopedik & Traumatologi (Dr. Ortho. & Trauma UKM) (Peperiksaan Bahagian II Jawatankuasa Kepakaran Ortopedik/ Peperiksaan Akhir):  
*Dissertations and case write-ups should be accepted as satisfactory by supervisors before being submitted 6 months before the / Doctor of Orthopaedic & Traumatology (Dr. Ortho. & Trauma UKM) Examination) (Orthopaedic Specialty Committee Part II Examination/ Exit Exam):*

Penilaian program dibahagikan kepada **tiga (3) bahagian:**

*The evaluation of the programme is divided into **three (3) sections:***

**1. Penilaian Formatif**

***Formative Assessment***

**1.1 Penilaian Latihan Klinik Mini (Mini-CEX) (LAMPIRAN VII)**

la menyediakan rangka kerja yang tersusun untuk memberi maklum balas kepada calon latihan mengenai prestasi mereka dalam situasi klinik. Sekurang-kurangnya tujuh (7) Mini-CEX diperlukan dalam setiap rotasi.

***Mini Clinical Evaluation Exercise (Mini-CEX) (ATTACHMENT VII)***

*It provides a structured framework for providing feedback to trainees regarding their performance in clinic settings. A minimum of seven (7) Mini-CEX are required during each rotation.*

**1.2 Perbincangan Berasaskan Kes (CbD) (LAMPIRAN VIII)**

la terdiri daripada perbincangan mendalam yang tersusun antara calon latihan dan jurulatih atau penyelia menggunakan Rekod Kes, Rekod Buku Log atau Laporan Klinik sebagai asas perbincangan. Sekurang-kurangnya 2 penilaian CbD diperlukan dalam setiap rotasi.

***Case-based Discussion (CbD) (ATTACHMENT VIII)***

*It consists of a structured in-depth discussion between the trainee and trainer or supervisor using Case Records, Logbook Records or a Clinical Report as the basis for the discussion. A minimum of 2 CbD assessments are required in each rotation.*

**1.3 Penilaian Berasaskan Prosedur (PBA) (LAMPIRAN IX)**

la merangkumi beberapa elemen (penanda tingkah laku) di bawah 7 “domain”: Persetujuan, Perancangan Pra-Pembedahan, Persediaan Pra-Pembedahan, Pendedahan & Penutupan, Teknik Semasa Pembedahan, dan Pengurusan Pasca Pembedahan. Ringkasan Global memberikan peluang untuk membuat anggaran tahap kepakaran di mana elemen yang diperhatikan itu dilaksanakan. Sekurang-kurangnya tiga (3) penilaian PBA diperlukan dalam setiap rotasi.

***Procedure Based Assessment (PBA) (ATTACHMENT IX)***

*It gathers a series of elements (behavioural markers) under 7 “domains”: Consent, Pre-operative planning, Pre-operative preparation, Exposure & closure, Intra operative technique and Post- Operative management. A Global Summary provides the opportunity to make an estimate of the level of expertise at which the observed elements were performed. A minimum of three (3) PBA assessments are required in each rotation.*

**1.4 Buku Log Prosedur Pembedahan (LAMPIRAN X)**

Merupakan rekod jumlah dan jenis prosedur yang telah dijalankan serta tahap penyeliaan yang diterima.

***Logbook of Operative (ATTACHMENT X)***

*A record of the number and range of procedures performed and the supervision provided.*

### **1.5 Laporan Kajian Kes (LAMPIRAN XI)**

Merupakan kertas akademik yang bertujuan untuk menilai kemahiran calon latihan dan berfungsi terutamanya sebagai peluang refleksi yang tersusun.

#### **Case Study Report (ATTACHMENT XI)**

*An academic paper that serves to assess the trainee's skills and function largely as a structured reflection opportunity.*

### **1.6 Perjanjian Pembelajaran & Laporan Jurulatih (LAMPIRAN VI) – setiap 4 bulan** Kemajuan sepanjang program latihan.

#### **Trainer's Learning Agreement & Report (ATTACHMENT VI) – every 4 months**

*Progress throughout the training programme.*

### **1.7 Perjanjian Pembelajaran & Laporan Penyelia (LAMPIRAN IV & V) – setiap 4 bulan**

Kemajuan keseluruhan sepanjang program latihan.

#### **Supervisor's Learning Agreement & Report (ATTACHMENT IV & V) – every 4 months**

*Overall progress throughout the training programme.*

### **1.8 Ulasan Akhir Tahun**

Penilaian terhadap portfolio calon latihan serta laporan bertulis yang memuaskan daripada jurulatih dan penyelia.

#### **End of year review**

*An evaluation of their portfolio and satisfactory written reports from the trainers and supervisors.*

### **1.9 Aktiviti Pembelajaran Asas Tamat Latihan**

Penilaian akan berdasarkan penulisan reflektif yang diperoleh daripada CbD dan PBA.

#### **Exit Essential Learning Activity**

*Assessment will be based on reflective writing evidence from CbD and PBA.*

| No | Dokumen<br><i>Document</i>                                                                                                                           | Keperluan<br><i>Requirement</i>                                                                         |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| 1  | <b>Penilaian Berasaskan Prosedur (PBA)</b><br><i>Procedure Based Assessment (PBA)</i>                                                                | <b>3 bagi setiap rotasi</b><br><i>3 per rotation</i>                                                    |
| 2  | <b>Penilaian Latihan Klinik Mini (Mini-CEX)</b><br><i>Mini Clinical Evaluation Exercise (Mini-CEX)</i>                                               | <b>7 bagi setiap rotasi</b><br><i>7 per rotation</i>                                                    |
| 3  | <b>Perbincangan Berasaskan Kes (CbD)</b><br><i>Case-based Discussion (CbD)</i>                                                                       | <b>2 bagi setiap rotasi</b><br><i>2 per rotation</i>                                                    |
| 4  | <b>Buku Log Prosedur Pembedahan</b><br><i>Logbook of Operative</i>                                                                                   | <b>Bilangan kes yang dikendalikan adalah memuaskan</b><br><i>satisfactory number of cases performed</i> |
| 5  | <b>Penyelidikan, Audit dan Penambahbaikan Kualiti (RAQI)</b><br><i>Research, Audit and Quality Improvement (RAQI)</i>                                | <b>Mencapai penanda aras yang ditetapkan</b><br><i>Achieved milestones</i>                              |
| 6  | <b>Laporan Kes</b><br><i>Case Report</i>                                                                                                             | <b>1 bagi setiap rotasi</b><br><i>1 per rotation</i>                                                    |
| 7  | <b>Kehadiran di acara CPD</b><br><i>Attendance at CPD events</i>                                                                                     | <b>Memuaskan</b><br><i>satisfactory</i>                                                                 |
| 8  | <b>Bengkel/kursus penting</b><br><i>Essential workshops/ courses</i>                                                                                 | <b>Memuaskan</b><br><i>satisfactory</i>                                                                 |
| 9  | <b>Perjanjian Pembelajaran dengan Tenaga Pengajar &amp; Laporan Tenaga Pengajar</b><br><i>Learning Agreement with Trainer &amp; Trainer's Report</i> | <b>1 bagi setiap rotasi</b><br><i>1 per rotation</i>                                                    |
| 10 | <b>Perjanjian Pembelajaran dengan Penyelia</b><br><i>Learning Agreement with Supervisor</i>                                                          | <b>1 setiap setahun</b><br><i>1 per year</i>                                                            |
| 11 | <b>Laporan Penyelia</b><br><i>Supervisor's Report</i>                                                                                                | <b>1 bagi setiap rotasi</b><br><i>1 per rotation</i>                                                    |

Jadual 5: Ringkasan Penilaian  
Table 5: Assessment Summary

## 2. Penilaian Akademik

### Academic Evaluation

#### 2.1 Penyelidikan

| KATEGORI<br>CATEGORY                                                                                                                                     | DISERTASI<br>DISSERTATION                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Akhir Tahun 1<br>End of 1 <sup>st</sup> Year                                                                                                             | Pembentangan Cadangan dan Kelulusan Jawatankuasa Etika<br><i>Proposal Presentation and Ethics Committee Approval</i>                                                 |
| Akhir Tahun 2<br>End of 2 <sup>nd</sup> Year                                                                                                             | Pengumpulan data<br><i>Data collection</i>                                                                                                                           |
| Akhir Tahun 3<br>End of 3 <sup>rd</sup> Year                                                                                                             | Pengumpulan data telah lengkap dan penyerahan manuskrip pada akhir Tahun 3<br><i>Completed data collection and Manuscripts submission end of 3<sup>rd</sup> year</i> |
| Akhir Semester 1 – Tahun 4<br>End of Semester 1<br>4 <sup>th</sup> Year                                                                                  | Temuduga untuk layak menduduki peperiksaan<br><i>Interview to be eligible to sit for the exam</i>                                                                    |
| <b>*Perlu dihantar kepada penyelia satu (1) bulan sebelum tarikh temuduga</b><br><i>Need to submit to supervisor one (1) month before interview date</i> |                                                                                                                                                                      |

Jadual 6: Disertasi Manuskrip (Kemajuan Penyelidikan)

Table 6: Manuscript-Based Dissertation (Research Progress)

#### 2.2 Laporan Kajian Kes

##### Case Study Report

Garis panduan / jadual bagi penerbitan, laporan kajian kes klinikal dan disertasi (kemajuan penyelidikan) adalah seperti berikut:

*The guideline / schedule of publications, writing the case study report and dissertation (research progress) are as follows:*

##### **Polisi Baharu Berkuat Kuasa Mulai 01.06.2022**

##### **New Policy Commencing 01.06.2022:**

- Bagi penerbitan, nama sebagai Pengarang Pertama dan Penulis Koresponden adalah dikira sebagai satu penerbitan.  
*For publications, being listed as the First Author and the Corresponding Author is counted as one publication.*
- Perlu dihantar satu (1) bulan sebelum tarikh penilaian formatif.  
*Need to be submitted one (1) month before the date of formative assessment.*
- Penerbitan yang akan diterima hanyalah penerbitan dalam jurnal yang diindeks ISI, WoS / ERA / ESCI.

| <b>KATEGORI</b><br><i>CATEGORY</i>                        | <b>MINIMUM NO. PENERBITAN ATAU PENULISAN KES</b><br><i>MINIMUM NO. OF PUBLICATION OR CASE WRITE-UP</i><br><br><b>PERLU DILENGKAPKAN</b><br><i>TO BE COMPLETED</i><br><b>(Jumlah kumulatif)</b><br><i>(cumulative total)</i>                                                              |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Akhir Tahun 1</b><br><i>End of 1<sup>st</sup> Year</i> | <b>Bukti satu kes yang dirancang untuk dihantar untuk penerbitan</b><br><i>prove of case that is plan to be send for publication</i><br>ATAU<br><i>or</i><br><b>Dua (2) penulisan kes</b><br><i>Two (2) case write-ups</i>                                                               |
| <b>Akhir Tahun 2</b><br><i>End of 2<sup>nd</sup> Year</i> | <b>Satu (1) penerbitan</b><br><i>One (1) publication</i><br>ATAU<br><i>or</i><br><b>Lima (5) penulisan kes</b><br><i>Five (5) case write-ups</i>                                                                                                                                         |
| <b>Akhir Tahun 3</b><br><i>End of 3<sup>rd</sup> Year</i> | <b>Dua (2) penerbitan</b><br><i>Two (2) publications</i><br>ATAU<br><i>or</i><br><b>Satu (1) penerbitan + Lima (5) penulisan kes</b><br><i>One (1) publication + Five (5) case write-ups</i><br>ATAU<br><i>or</i><br><b>Sepuluh (10) penulisan kes</b><br><i>Ten (10) case write-ups</i> |
| <b>Akhir Tahun 4</b><br><i>End of 4<sup>th</sup> Year</i> | Penyerahan telah lengkap<br><i>Submission completed</i>                                                                                                                                                                                                                                  |
| <b>Ringkasan</b><br><i>Summary</i>                        | <b>Dua (2) penerbitan</b><br><i>Two (2) publications</i><br>ATAU<br><i>or</i><br><b>Satu (1) penerbitan + Lima (5) penulisan kes</b><br><i>One (1) publication + Five (5) case write-ups</i><br>ATAU<br><i>or</i><br><b>Sepuluh (10) penulisan kes</b><br><i>Ten (10) case write-ups</i> |

Jadual 7: Jadual bagi Laporan Kajian Kes & Penerbitan

Table 7: Schedule for Case Study Reports and Publications

**3. Penilaian Sumatif (Peperiksaan Tamat Latihan / Peperiksaan Doktor Ortopedik & Traumatologi (Dr. Ortho. & Trauma UKM))**

*Summative Assessment (Exit Examination/ Doctor of Orthopaedics & Traumatology Examination (Dr. Ortho. & Trauma UKM))*

**3.1 Bertulis**

*Written*

1. Soalan-Jawapan Tunggal Terbaik  
*Single Best Answer Questions (SBAQ)*
2. Esei 1 dan 2  
*Essay 1 and 2*

**3.2 Peperiksaan Klinikal**

*Clinical Examination*

1. Peperiksaan Klinikal Objektif Berstruktur (OSCE)  
*Objective Structured Clinical Examination (OSCE)*
2. Viva voce 1 & 2  
*Viva voce 1 & 2*
3. Kes Panjang yang Diubahsuai  
*Modified Long Case*
4. Kes Pendek  
*Short Case*

**NOTA:**

**NOTE:**

**Calon latihan yang gagal mengemukakan borang penilaian mereka atau yang mempunyai laporan penilaian yang tidak memuaskan tidak dibenarkan untuk meneruskan ke semester/tahun berikutnya atau dilarang untuk menduduki Peperiksaan Akhir.**

*Trainees who fail to submit their assessment forms or whose assessment reports are poor will not be allowed to proceed to the next semester / year or be barred to sit for the Exit Examination.*

| <b>SEKSYEN</b><br><b>SECTION</b><br><b>I</b><br><b>I</b><br><b>(TEORI)</b><br><b>(THEORY)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>SEKSYEN</b><br><b>SECTION</b><br><b>II</b><br><b>II</b><br><b>(VIVA &amp; OSCE)</b><br><b>(VIVA &amp; OSCE)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>SEKSYEN</b><br><b>SECTION</b><br><b>III</b><br><b>III</b><br><b>(KLINIKAL)</b><br><b>(CLINICALS)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. <b>ESEI I</b><br/> <i>ESSAY I</i><br/> - 3 Esei Panjang + 3 Nota Ringkas<br/> <i>3 long essays + 3 short notes</i><br/> - 2 Jam<br/> <i>2 Hrs</i><br/> - 100 markah (50%)<br/> <i>100 marks (50%)</i></p> <p>2. <b>ESEI II</b><br/> <i>PAPER II</i><br/> - 3 Esei Panjang + 3 Nota Ringkas<br/> <i>3 long essays + 3 short</i><br/> - 2 Jam<br/> <i>2 hrs</i><br/> - 100 markah (50%)<br/> <i>100 marks (50%)</i></p> <p>3. <b>MCQs</b><br/> - 100 soalan (Soalan-Jawapan Tunggal)<br/> <i>100 questions (single-answer type)</i><br/> - 3 Jam<br/> <i>3 hrs</i><br/> - 100 markah<br/> <i>100 marks</i></p> | <p>1. <b>VIVA I</b><br/> <i>VIVA I</i><br/> - Prinsip Pembedahan Ortopedik<br/> <i>Principles of Orthopaedic Surgery</i><br/> - 30 min<br/> <i>30 min</i><br/> - 100 markah<br/> <i>100 marks</i></p> <p>2. <b>VIVA II</b><br/> <i>VIVA II</i><br/> - Ortopedik Operatif<br/> <i>Operative Orthopaedics</i><br/> - 30 min<br/> <i>30 min</i><br/> - 100 markah<br/> <i>100 marks</i></p> <p>3. <b>OSCE (VIVA III) *</b><br/> <i>OSCE (VIVA III) *</i><br/> - 20 soalan<br/> <i>20 questions</i><br/> - 3 jam<br/> <i>3 hrs</i><br/> - 200 markah (50%)<br/> <i>200 marks (50%)</i></p> | <p>1. <b>KES PANJANG</b><br/> <i>LONG CASES</i><br/> - 2 pesakit setiap calon<br/> <i>2 patient per candidate</i><br/> - 30 minit pemeriksaan dan soal jawab untuk pesakit pertama<br/> <i>30 minutes clerking examination and Q &amp; A for first patient</i><br/> - 30 minit pemeriksaan dan soal jawab untuk pesakit kedua<br/> <i>30 minutes clerking examination and Q &amp; A for second patient</i><br/> - 100 markah<br/> <i>100 marks</i></p> <p>2. <b>KES PENDEK</b><br/> <i>SHORT CASES</i><br/> - 3 pesakit setiap calon<br/> <i>3 patients per candidate</i><br/> - 10 minit setiap pesakit<br/> <i>10 min each patient</i><br/> <b>(JUMLAH 30 min)</b><br/> <i>(TOTAL 30 min)</i><br/> - 100 markah<br/> <i>100 marks</i></p> |
| <p><b>JUMLAH 200 markah</b><br/> <i>TOTAL 200 marks</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p><b>JUMLAH 300 markah</b><br/> <i>TOTAL 300 marks</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p><b>JUMLAH 200 markah</b><br/> <i>TOTAL 200 marks</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>MARKAH LULUS 100/200</b><br/> <i>PASS MARK 100/200</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p><b>MARKAH LULUS 150/300</b><br/> <i>PASS MARK 150/300</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>MARKAH LULUS 100/200</b><br/> <i>PASS MARK 100/200</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

Jadual 8: Format Peperiksaan

Table 8: Examination Format

**\*\* Keperluan Khas untuk Peperiksaan Klinikal:**

**\*\* Special requirement for the Clinical Examination:**

**Jika calon memperoleh markah 40% atau kurang sama ada dalam VIVA atau OSCE atau Kes Panjang atau Kes Pendek, calon tersebut akan gagal keseluruhan peperiksaan (gagal tidak boleh ditebus).**

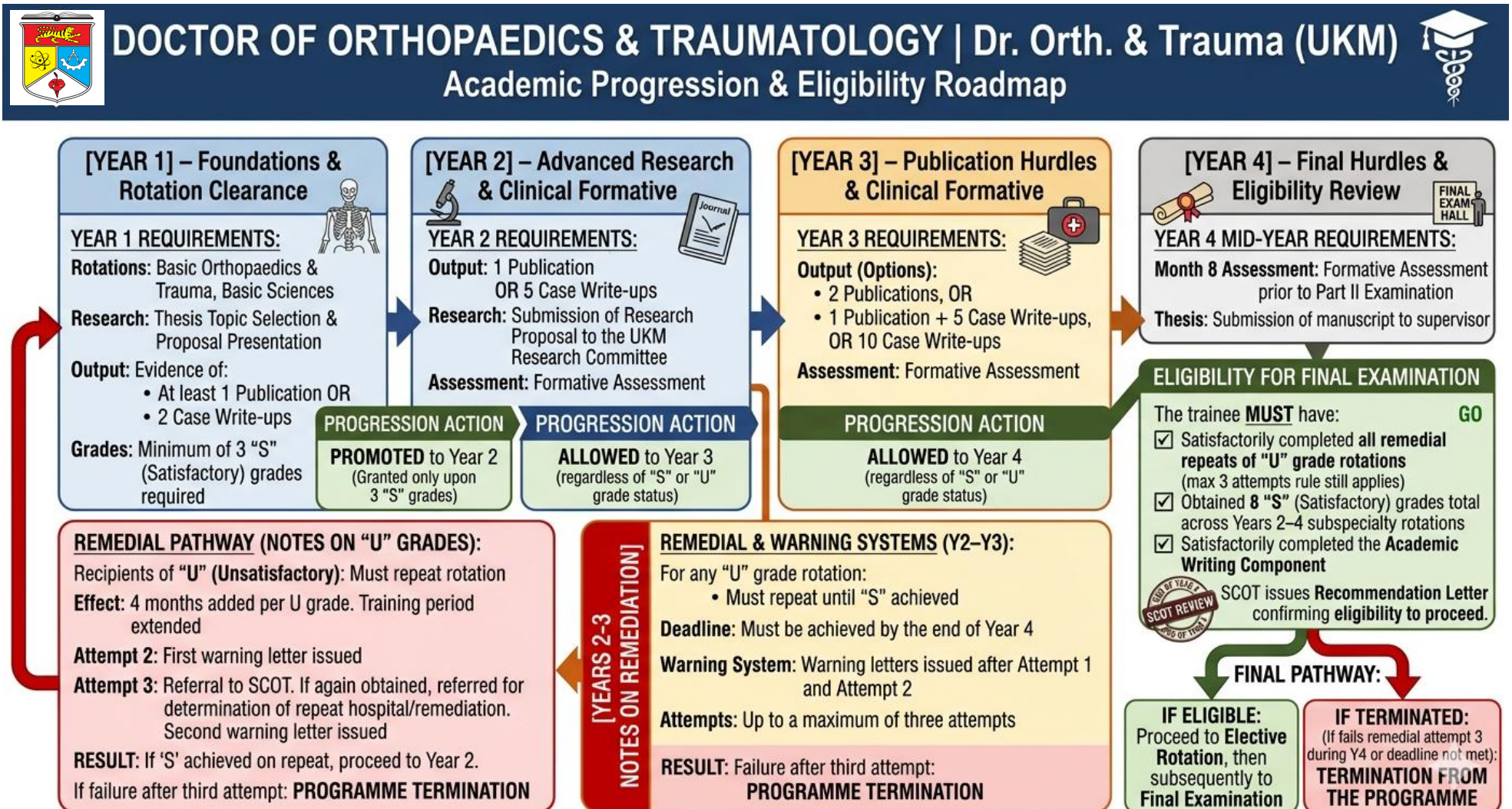
*If a candidate scores 40% or less in either VIVA or OSCE or the Long Case or Short Case, they will fail the entire examination (unredeemable fail).*

**Hanya calon yang lulus Seksyen Teori dibenarkan meneruskan ke peperiksaan Klinikal dan Viva Voce.**

*Only candidates who pass the Theory Section are permitted to proceed to the Clinical and Viva Voce examinations.*

**SYARAT KEMAJUAN PENGAJIAN**  
Academic Progression Requirements

Jadual 9: Infografik Syarat Kemajuan Kenaikan Tahun Pengajian  
Table 9: Infographic Requirements for Year Progression



## 1.5.1 BUKU LOG LOG BOOK

### BUKU LOG PROSEDUR PEMBEDAHAN LOG BOOK OF OPERATIONS:

1. Buku log merupakan salah satu alat untuk menilai kemajuan calon latihan dalam pendedahan dan pengalaman pembedahan.  
*The log book is one of the tools used to assess the trainee's progress in surgical exposure and experience.*
2. Calon latihan dikehendaki mencatatkan rekod pembedahan yang telah mereka bantu/lakukan di bawah penyeliaan/ lakukan sendiri ke dalam buku log.  
*Trainees are required to record surgical operations that they have assisted / performed under supervision / performed on their own into the log book.*
3. Format adalah mengikut buku log yang disediakan; tiada format lain dibenarkan. (LAMPIRAN X)  
*The format is in the log book provided; no other format is to be used. (ATTACHMENT X)*
4. Calon latihan dinasihatkan untuk mengelompokkan buku log mereka mengikut kategori yang berbeza contohnya Trauma, Ortopedik Am, Spinal, Ortopedik Pediatrik, Arthroplasti, LLRS (Pemanjangan Anggota dan Pembedahan Rekonstruktif), Onkologi Ortopedik, Pembedahan Tangan dan Mikrosurgi serta Sukan.  
*Trainees are advised to group their log books under various categories e.g. Trauma, General Orthopaedics, Spine, Paediatric Orthopaedics, Arthroplasty, LLRS (Limb Lengthening and Reconstructive Surgery), Orthopaedic Oncology, Hand and Microsurgery and Sports.*
5. Adalah disarankan agar catatan dibuat segera selepas setiap prosedur pembedahan selesai.  
*It is advised that these entries are made at the end of each surgical operation.*
6. Buku log mesti disediakan untuk pemeriksaan apabila diminta oleh penyelia.  
*The log book must be available for inspection on request by the supervisor.*
7. Dinasihatkan menyimpan salinan digital buku log sebagai sandaran.  
*It is advised that a digital copy is also made and kept by the trainee as a back-up.*

## 1.5.2 PENULISAN KES CASE WRITE-UPS

### Keperluan Penulisan Kes

#### *Case Write-up Requirements*

#### 1. Kelulusan

##### **Approval**

- i. Semua penulisan kes mesti mendapat kelulusan daripada penyelia dan Jabatan sebelum diterima.  
*All case write-ups must be approved by the supervisor and the Department before acceptance.*
- ii. Kelulusan adalah wajib untuk membolehkan calon menduduki Peperiksaan Keluar.  
*Approval is mandatory to allow the candidate to sit for the Exit Examination.*

#### 2. Bilangan dan Masa Penyerahan

##### **Number and Submission Timing**

- i. Calon dikehendaki menyediakan **10 penulisan kes**.  
*Candidates must prepare 10 case write-ups.*
- ii. Penulisan kes hendaklah diserahkan dalam **salinan digital** kepada Jabatan sekurang-kurangnya **6 bulan sebelum Peperiksaan Keluar**.  
*Submit these in soft copy form to the Department 6 months prior to the Exit Examination.*

#### 3. Salinan yang Diperlukan

##### **Copies Required**

- i. Hantar **dua salinan cetak keras** (satu untuk pelatih dan satu untuk Kementerian Kesihatan).  
*Submit two hard copies (one for the trainee and one for the Ministry of Health).*
- ii. Hantar **satu salinan digital** kepada Jabatan.  
*Submit one soft copy to the Department.*

#### 4. Pemilihan Kes

##### **Case Selection**

- i. Kes yang dipilih mestilah **menarik, unik, luar biasa atau jarang berlaku**.  
*Cases should be interesting, unique, unusual, or rare*
- ii. Calon digalakkan untuk menghantar penulisan kes tersebut untuk **penerbitan jurnal**.  
*Candidates are encouraged to submit their write-ups for publication in a journal.*

## 5. Pembahagian Kes

### *Distribution of Cases*

- i. 3 kes mengenai **Trauma**  
3 cases on **Trauma**
- ii. 1 kes setiap satu untuk:  
1 case each on:
  1. Kecederaan Sukan & Artroskopik  
*Sports Injury & Arthroscopic*
  2. Spinal  
*Spine*
  3. Pembedahan Tangan & Mikro  
*Hand & Microsurgery*
  4. Pediatrik Ortopedik  
*Paediatric Orthopaedic*
  5. Artroplasti  
*Arthroplasty*
  6. Onkologi  
*Oncology*
  7. Rehabilitasi  
*Rehabilitation*

## 6. Keperluan Kandungan

### *Content Requirements*

- i. Setiap penulisan kes hendaklah melibatkan **prosedur pembedahan**.  
*Each write-up should involve an operative procedure.*
- ii. Penulisan kes juga boleh mengikuti format **Malaysian Orthopaedic Journal (MOJ)**.  
*Case reports can follow the Malaysian Orthopaedic Journal (MOJ) format.*
- iii. Arahan MOJ: <https://www.morthoj.org/instructions-for-authors.php>  
*MOJ instructions: <https://www.morthoj.org/instructions-for-authors.php>*

## 7. Garis Panduan Penulisan Kes

### *General Outline of Case Write-up*

- |                                                                                                           |                                                                                                 |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| i. Data pengenalan pesakit<br><i>Patient identification data</i>                                          | v. Perincian operasi yang dijalankan<br><i>Account of the operation performed</i>               |
| ii. Sejarah ringkas dan penemuan fizikal<br><i>Concise history and physical findings</i>                  | vi. Pengurusan selepas pembedahan dan susulan<br><i>Post-operative management and follow-up</i> |
| iii. Diagnosis dan diagnosis pembezaan (jika ada)<br><i>Diagnosis and differential diagnoses (if any)</i> | vii. Perbincangan<br><i>Discussion</i>                                                          |
| iv. Siasatan pemeriksaan yang berkaitan<br><i>Relevant investigations</i>                                 | viii. Kesimpulan atau ringkasan<br><i>Conclusion or summary</i>                                 |
|                                                                                                           | ix. Rujukan<br><i>References</i>                                                                |

Garis panduan / jadual bagi penerbitan, penulisan kes klinikal dan disertasi (kemajuan penyelidikan) adalah seperti berikut:  
 The guideline / schedule of publications, writing the case write-ups and dissertation (research progress) are as follows:

**Polisi Baharu Berkuat Kuasa Mulai 01.06.2022**  
**New Policy Commencing 01.06.2022:**

- Bagi penerbitan, nama sebagai Pengarang Pertama dan Penulis Koresponden adalah dikira sebagai satu penerbitan.  
*For publications, being listed as the First Author and the Corresponding Author is counted as one publication.*
- Perlu dihantar satu (1) bulan sebelum tarikh penilaian formatif.  
*Need to be submitted one (1) month before the date of formative assessment.*
- Penerbitan yang akan diterima hanyalah penerbitan dalam jurnal yang diindeks ISI, WoS / ERA / ESCI.  
*Publication that will be accepted only publication in the ISI, WoS / ERA / ESCI index journal.*

| KATEGORI<br>CATEGORY                                             | MINIMUM NO. PENERBITAN ATAU PENULISAN KES<br>MINIMUM NO. OF PUBLICATION OR CASE WRITE-UP                                                                                                                                                         | KATEGORI<br>CATEGORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | DISERTASI<br>DISSERTATION                                                                                                                                            |                                                                  |                                                                                   |   |   |   |   |   |    |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|---|---|---|----|
|                                                                  | <b>PERLU DILENGKAPKAN<br/>TO BE COMPLETED<br/>(Jumlah kumulatif)<br/>(cumulative total)</b>                                                                                                                                                      | <b>Akhir Tahun 1<br/>End of 1<sup>st</sup> Year</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Pembentangan Cadangan dan Kelulusan Jawatankuasa Etika<br><i>Proposal Presentation and Ethics Committee Approval</i>                                                 |                                                                  |                                                                                   |   |   |   |   |   |    |
| <b>Akhir Tahun 1<br/>End of 1<sup>st</sup> Year</b>              | <b>Bukti satu kes yang dirancang untuk dihantar untuk penerbitan<br/>prove of case that is plan to be send for publication<br/>ATAU<br/>or<br/>Dua (2) penulisan kes<br/>Two (2) case write-ups</b>                                              | <b>Akhir Tahun 2<br/>End of 2<sup>nd</sup> Year</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Pengumpulan data<br><i>Data collection</i>                                                                                                                           |                                                                  |                                                                                   |   |   |   |   |   |    |
| <b>Akhir Tahun 2<br/>End of 2<sup>nd</sup> Year</b>              | <b>Satu (1) penerbitan<br/>One (1) publication<br/>ATAU<br/>or<br/>Lima (5) penulisan kes<br/>Five (5) case write-ups</b>                                                                                                                        | <b>Akhir Tahun 3<br/>End of 3<sup>rd</sup> Year</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Pengumpulan data telah lengkap dan penyerahan manuskrip pada akhir Tahun 3<br><i>Completed data collection and Manuscripts submission end of 3<sup>rd</sup> year</i> |                                                                  |                                                                                   |   |   |   |   |   |    |
| <b>Akhir Tahun 3<br/>End of 3<sup>rd</sup> Year</b>              | <b>Dua (2) penerbitan<br/>Two (2) publications<br/>ATAU<br/>or<br/>Satu (1) penerbitan + Lima (5) penulisan kes<br/>One (1) publication + Five (5) case write-ups<br/>ATAU<br/>or<br/>Sepuluh (10) penulisan kes<br/>Ten (10) case write-ups</b> | <b>Akhir Semester 1 – Tahun 4<br/>End of Semester 1<br/>4<sup>th</sup> Year</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Temuduga untuk layak menduduki peperiksaan<br><i>Interview to be eligible to sit for the exam</i>                                                                    |                                                                  |                                                                                   |   |   |   |   |   |    |
| <b>Akhir Tahun 4<br/>End of 4<sup>th</sup> Year</b>              | Penyerahan telah lengkap<br><i>Submission completed</i>                                                                                                                                                                                          | <b>*Perlu dihantar kepada penyelia satu (1) bulan sebelum tarikh temuduga</b><br><i>Need to submit to supervisor one (1) month before interview date</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                      |                                                                  |                                                                                   |   |   |   |   |   |    |
| <b>Ringkasan<br/>Summary</b>                                     | <b>Dua (2) penerbitan<br/>Two (2) publications<br/>ATAU<br/>or<br/>Satu (1) penerbitan + Lima (5) penulisan kes<br/>One (1) publication + Five (5) case write-ups<br/>ATAU<br/>or<br/>Sepuluh (10) penulisan kes<br/>Ten (10) case write-ups</b> | <table border="1"> <thead> <tr> <th>Bil. penulisan kes diterbitkan<br/>No. of published case write-up</th> <th>Jumlah penulisan kes untuk dihantar<br/>Total no. of case write-up to be submitted</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">10</td> </tr> </tbody> </table> <p><b>❖ Sila ambil perhatian bahawa jumlah penulisan kes yang akan diserahkan (seperti di atas) dikecualikan daripada penulisan kes yang diterbitkan</b><br/> <i>Please take note that the total number of case write-up to be submitted (as above) is exclude of the published case write-up</i></p> |                                                                                                                                                                      | Bil. penulisan kes diterbitkan<br>No. of published case write-up | Jumlah penulisan kes untuk dihantar<br>Total no. of case write-up to be submitted | 1 | 5 | 2 | 0 | 0 | 10 |
| Bil. penulisan kes diterbitkan<br>No. of published case write-up | Jumlah penulisan kes untuk dihantar<br>Total no. of case write-up to be submitted                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                      |                                                                  |                                                                                   |   |   |   |   |   |    |
| 1                                                                | 5                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                      |                                                                  |                                                                                   |   |   |   |   |   |    |
| 2                                                                | 0                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                      |                                                                  |                                                                                   |   |   |   |   |   |    |
| 0                                                                | 10                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                      |                                                                  |                                                                                   |   |   |   |   |   |    |

**NOTA:** Kegagalan mematuhi akan menyebabkan kegagalan untuk melanjutkan pengajian ke tahun berikutnya atau dihalang daripada menduduki peperiksaan akhir.  
**NOTE:** Failure to comply results in failure to progress to the subsequent year of study or be barred to sit for the final examinations.

## 1.5.3 DISERTASI DISSERTATION

### Garis Panduan Disertasi / Tesis

#### *Dissertation / Thesis Guidelines*

#### 1. Kelulusan Disertasi

##### ***Dissertation Approval***

Disertasi yang lengkap mesti mendapat kelulusan daripada penyelia dan Jabatan sebelum calon dibenarkan menduduki Peperiksaan Akhir / Peperiksaan Doktor Ortopedik & Traumatologi (Dr. Ortho. & Trauma UKM) (Peperiksaan Akhir Jawatankuasa Kepakaran Ortopedik)

*The completed dissertation must be approved by the supervisor and the Department before the candidate is allowed to appear for the Exit Examination / Doctor of Orthopaedics & Traumatology Examination (Dr. Ortho. & Trauma UKM) (Orthopaedic Specialty Committee Exit Examination).*

#### 2. Bahasa dan Format

##### ***Language and Format***

- ❖ Disertasi boleh ditulis dalam Bahasa Melayu atau Bahasa Inggeris.  
*The dissertation may be written in Malay or English.*
- ❖ Mesti diawali dengan tajuk dan sinopsis.  
*It should be preceded by a title and a synopsis.*
- ❖ Menggunakan kertas bersaiz 210 x 280 mm, bertulis dua ruang (double-spaced) dengan margin 40 mm di semua sisi.  
*Use paper size 210 x 280 mm, double-spaced with 40 mm margins on all sides.*
- ❖ Mempunyai kulit keras (hard cover).  
*Hard cover binding is required.*
- ❖ Jumlah perkataan tidak melebihi 5,000 patah perkataan.  
*The dissertation must not exceed 5,000 words.*
- ❖ Mesti mengandungi histogram, jadual, carta, rajah, gambar atau representasi skematik yang relevan.  
*It should include relevant histograms, tables, charts, figures, photographs, or schematic representations.*
- ❖ Disertasi hendaklah disediakan dalam format yang sesuai untuk penerbitan dalam jurnal berindeks.  
*The format should be suitable for publication in an indexed journal.*

#### 4. Struktur Disertasi

##### ***Dissertation Structure***

- ❖ Pengakuan  
*Acknowledgement*
- ❖ Abstrak (Bahasa Melayu & Bahasa Inggeris) – tidak melebihi 300 patah perkataan  
*Abstract (in both Malay and English) — not exceeding 300 words*
- ❖ Pengenalan  
*Introduction*
- ❖ Bahan dan Kaedah  
*Materials and Methods*
- ❖ Keputusan  
*Results*
- ❖ Perbincangan  
*Discussion*
- ❖ Kesimpulan  
*Conclusion*
- ❖ Rujukan  
*References*

#### 5. Pembentangan Disertasi

##### ***Dissertation Presentation***

Calon latihan dikehendaki membentangkan disertasinya kepada Jabatan dan pada Mesyuarat Saintifik Tahunan Persatuan Ortopedik Malaysia.

*The trainee is required to present their dissertation to the Department and at the Malaysian Orthopaedic Association Annual Scientific Meeting.*

## 1.5.4 YURAN DAN CUTI TAHUNAN

### FEES AND ANNUAL LEAVE

#### Yuran *Fees*

#### Yuran Pendaftaran (*Registration Fee*): **RM1,010.00**

- \* **Yuran pengajian:** RM5,884.00 untuk tahun pertama, dan RM4,874.00 untuk semester berikutnya.

*Tuition fees: RM5,884.00 for the 1<sup>st</sup> year, then RM4,874.00 subsequent semester.*

- \* **Yuran peperiksaan:** RM500.00 untuk Bahagian I dan RM1,000.00 untuk Bahagian II / Peperiksaan Akhir.

*Exam fees: RM500.00 for Part I and RM1,000.00 for Part II/ Exit Examination.*

**Jumlah bayaran:** Minimum RM40,002 (bergantung kepada bilangan semester).

**NOTA:** Bayaran boleh berubah dari semasa ke semasa. Untuk maklumat terkini, sila layari:

[https://bendahari.ukm.my/student\\_portal](https://bendahari.ukm.my/student_portal)

**NOTE:** Fees are subject to change; [https://bendahari.ukm.my/student\\_portal](https://bendahari.ukm.my/student_portal)

#### CUTI TAHUNAN *ANNUAL LEAVE*

- \* Permohonan cuti oleh calon tertakluk kepada kelulusan Jabatan.  
*Candidate's' application for leave is subject to approval by Department.*
- \* Cuti dibenarkan sehingga maksimum **2 minggu setiap semester**, termasuk cuti bersalin dan cuti sakit.  
*Leave is allowed up to a maximum of 2 weeks per semester (including maternity / sick leave).*
- \* Cuti melebihi tempoh tersebut hanya akan dipertimbangkan dalam keadaan khas dan akan diputuskan oleh Jabatan berdasarkan kes demi kes.  
*Only under special circumstances will leave exceeding this period is considered and will be determined on a case-by-case basis by the Department.*

## 1.5.5 PENUNDAAN, PENANGGUHAN, PENGGANTUNGAN DAN PENAMATAN POSTPONEMENT, DEFERMENT/SUSPENSION AND TERMINATION

### Penangguhan Pendaftaran

#### *Postponement of Registration*

- Penangguhan pendaftaran dibenarkan selama 6 bulan atau 1 tahun, dengan alasan yang kukuh.  
*Postponement of registration is allowed for a period of 6 months or 1 year, with valid reasons.*
- Pemberitahuan bertulis perlu dikemukakan kepada Universiti / Jabatan sekurang-kurangnya satu (1) bulan sebelum tarikh pendaftaran.  
*Prior written notification must be submitted to the University / Department at least one (1) month before the registration date.*
- Kelulusan mesti diperoleh daripada Ketua Jabatan dan Sekretariat Pengajian Siswazah (SPS), Fakulti Perubatan.  
*Approval is required from the Head of Department and the Secretariat of Postgraduate Studies (SPS), Faculty of Medicine.*

### Penangguhan Pengajian (Setelah Berdaftar)

#### *Course Deferment (After Registration)*

- Calon yang telah berdaftar dibenarkan memohon penangguhan pengajian selama 1 atau 2 semester, dengan alasan yang kukuh.  
*A candidate who has already registered may apply for suspension or deferment of 1 or 2 semesters, with valid reasons.*
- Permohonan bertulis perlu dikemukakan kepada Universiti / Jabatan sekurang-kurangnya satu (1) bulan sebelum tarikh penangguhan yang dimohon.  
*Written application must be made to the University / Department at least one (1) month before the intended deferment date.*
- Kelulusan mesti diperoleh daripada Ketua Jabatan dan Sekretariat Pengajian Siswazah (SPS), Fakulti Perubatan.  
*Approval must be obtained from the Head of Department and the Secretariat of Postgraduate Studies (SPS), Faculty of Medicine.*

## **Penamatan Pengajian Sebelum Tamat Kursus**

*Termination of Studies Before Course Completion*

Calon latihan boleh menamatkan pengajian secara sukarela sebelum kursus tamat. Penamatan pengajian juga boleh dilakukan atas sebab-sebab berikut, seperti yang diperuntukkan di bawah:-  
*A trainee may voluntarily terminate their studies before completing the course. Termination may also be enforced due to the following reasons:*

### **Akta UKM (Pengajian Siswazah):**

*UKM Act – Graduate Studies*

- Melanggar Akta dan Peraturan UKM  
*Infringement of UKM Acts and Regulations*
- Melanggar undang-undang dan peraturan sivil  
*Violation of civil law and order*
- Mempunyai masalah sikap dan tingkah laku  
*Issues with attitude or behaviour*
- Prestasi akademik yang lemah atau merosot  
*Poor academic progress or academic decline*
- Ketidakupayaan mental atau fizikal  
*Mental or physical disability*
- Terlibat dalam aktiviti subversive  
*Involvement in subversive activities*
- Menghubungi pemeriksa bagi mendapatkan keputusan peperiksaan  
*Attempting to influence or contact examiners to procure examination results*

## 1.5.6 KURSUS PENDEK DAN BENGKEL KEMAHIRAN SHORT COURSES AND SKILLS WORKSHOPS

Calon latihan digalakkan untuk menghadiri kursus pendek dan bengkel kemahiran sepanjang tempoh 4 tahun pengajian dalam program ini. Aktiviti ini bukan sahaja dianjurkan oleh Fakulti Perubatan UKM, malah turut diadakan di universiti-universiti lain serta hospital-hospital Kementerian Kesihatan Malaysia (KKM) di seluruh negara. Maklumat lanjut mengenai program ini kebiasaannya boleh didapati melalui laman web rasmi Persatuan Ortopedik Malaysia (Malaysian Orthopaedic Association).

*Trainees are encouraged to attend short courses and skills workshops throughout the 4 years of the training programme. These activities are not only conducted by the Faculty of Medicine, UKM but also organised by other universities and Ministry of Health (MOH) hospitals across the country. Details of these courses and workshops are usually available on the official website of the Malaysian Orthopaedic Association (MOA).*

## 1.5.7 ANUGERAH AWARDS

### 1. HADIAH BUKU DR. MOHD NOOR MANUKARAN DR. MOHD NOOR MANUKARAN BOOK PRIZE

Setiap tahun, seorang calon latihan akan dianugerahkan Hadiah Buku Dr. Mohd Noor Manukaran dalam bentuk wang tunai sebanyak RM500.00. Penerima akan dipilih daripada kalangan calon tahun akhir UKM yang menduduki Peperiksaan Akhir / Peperiksaan Doktor Ortopedik & Traumatologi (Dr. Ortho. & Trauma UKM) (Peperiksaan Akhir Jawatankuasa Khas Ortopedik) pada sesi Mei atau November.

*Each year, a trainee will be awarded the Dr. Mohd Noor Manukaran Book Prize in the form of RM500.00. The recipient will be selected from among final-year UKM candidates who sat for the May or November Exit Examination / Doctor of Orthopaedics & Traumatology Examination (Dr. Ortho. & Trauma UKM) (Orthopaedic Specialty Committee Exit Examination).*

Hadiah ini akan diberikan kepada calon yang memperoleh markah tertinggi dan menunjukkan sikap profesional yang cemerlang sepanjang tempoh latihan.

*The prize will be awarded to the candidate with the highest score, who also demonstrates an exemplary professional attitude throughout the training.*

Anugerah ini tidak semestinya diberikan setiap tahun sekiranya tiada calon yang layak dikenal pasti.

*The prize may not be awarded in a given year if no suitable candidate is identified.*

Anugerah ini akan disampaikan semasa Majlis Konvokesyen Universiti.

*The award will be presented during the University Convocation Ceremony.*

## **2. ANUGERAH PROFESOR N. SUBRAMANIAN PROFESSOR N. SUBRAMANIAN AWARD**

Anugerah ini merupakan **Anugerah peringkat kebangsaan Persatuan Ortopedik Malaysia** yang diberikan kepada **calon latihan terbaik secara keseluruhan** daripada semua universiti yang menduduki **Peperiksaan Akhir / Peperiksaan Doktor Ortopedik & Traumatologi (Dr. Ortho. & Trauma UKM) (Peperiksaan Akhir Jawatankuasa Khas Ortopedik)**.

*This is a national-level Malaysian Orthopaedic Association Award presented to the best overall trainee from all universities who sit for the Exit Examination / Doctor of Orthopaedics & Traumatology Examination (Dr. Ortho. & Trauma UKM) (Orthopaedic Specialty Committee Exit Examination).*

## 2. SILIBUS SYLLABUS

Calon latihan mesti menguasai dan memperoleh pengetahuan tentang:  
*Trainees must have a sound grasp and must acquire knowledge of:*

### 2.1 TRAUMA TRAUMA

- Sokongan Hayat Trauma Lanjutan (ATLS)  
*Advanced Trauma Life Support (ATLS)*
- Penilaian, resusitasi dan kawalan kerosakan ortopedik  
*Evaluation, resuscitation and damage control orthopaedic*
- Trauma kecemasan ortopedik – kepatahan terbuka, sindrom kompartmen, embolisme lemak dan lain-lain  
*Orthopaedic trauma emergencies – open fracture, compartment syndrome, fat embolism and others*
- Kepatahan luar sendi anggota bawah  
*Extraarticular lower limb fractures*
- Kepatahan anggota atas  
*Upper limb fractures*
- anggota bawah terkehel  
*Lower limb dislocations*
- Jangkitan ortopedik – osteomielitis, artritis septik, fasciitis nekrotikans dan ulser kaki diabetes  
*Orthopaedic infections – osteomyelitis, septic arthritis, necrotizing fasciitis and diabetic foot ulcers*
- Amputasi anggota atas dan bawah  
*Upper and lower amputations*
- Biomekanik dan biomaterial  
*Biomechanics and biomaterials*
- Biomekanik muskuloskeletal  
*Musculoskeletal biomechanics*
  - Bahan biologi  
*Biological materials*
  - Bahan dalam implan ortopedik  
*Materials in orthopaedics implants*
  - Biomekanik penstabilan kepatahan  
*Biomechanic of fracture fixation*
  - Bahan penahan (tribologi) sendi tiruan  
*Bearing material (tribology) of artificial joints*

➤ Prinsip dan peralatan pembedahan / *Surgical principles and equipment*

- Prinsip pembedahan selamat dan amalan klinikal  
*Principles of safe surgery and clinical practice*
- Diatermi  
*Diathermy*
- Pemantauan neurofisiologi  
*Neuromonitoring*
- Traksi kulit dan tulang  
*Skin and skeletal traction*
- Pensterilan dan bahan pembasmi kuman  
*Sterilisation and disinfectant*
- Jahitan dan jarum  
*Sutures and needles*
- Tourniquet  
*Tourniquet*
- Doppler vascular  
*Vascular doppler*
- Traksi  
*Traction*

Prosedur Penting / *Essential Procedures*

- Arthrotomi  
*Arthrotomy*
- Pemindahan tulang – autologus dari ASIS dan PSIS, allograft  
*Bone grafting – autologous from ASIS and PSIS, allograft*
- Reduksi manipulatif tertutup dan pemasangan gips penuh di bawah sedasi – anggota atas dan anggota bawah  
*Closed manipulative reduction and application of full-length cast under sedation – upper limb and lower limb*
- Komplikasi awal selepas trauma – pemeriksaan dan pengurusan anggota yang bengkak dan sakit selepas trauma – sindrom kompartmen, patah, kecederaan vaskular, sindrom kelar, embolisme lemak  
*Early complications following trauma – review and management of painful swollen extremities post trauma – compartment syndrome, fractures, vascular injury, crush syndrome, fat embolism*
- Penstabilan kepatahan peri dan intra-artikular  
*Fixation of peri and intra-articular fractures*
- Pengurusan cecair pada pesakit yang cedera  
*Fluid management in injured patient*
- Insisi dan merawat abses / toilet (prosedur pembersihan/ pencucian luka) & jahitan (prosedur jahitan secara teknik aseptik) / debridement  
*Incision and drainage / toilet & suturing / debridement*
- Penilaian awal pesakit dengan kemungkinan jangkitan muskuloskeletal akut  
*Initial assessment of patient with possible acute musculoskeletal infection*
- Pemakuan intramedullari tibia dan femur  
*Intramedullary nailing of the tibia and femur*

- Teknik pendawaian-K  
*K-wiring techniques*
- Fiksasi skru lag  
*Lag screw fixation*
- Aspirasi dan suntikan sendi besar  
*Large joint aspiration and injection*
- Penggunaan anestesia setempat – blok tempatan – anggota atas dan bawah  
*Local anaesthesia use – local blocks – upper and lower limbs*
- Penggunaan anestesia setempat – blok serantau – anggota atas dan bawah  
*Local anaesthesia use – regional blocks – upper and lower limbs*
- Amputasi anggota bawah – transtibial dan transfemorale  
*Lower limb amputation – transtibial and transfemoral*
- Amputasi traumatik utama dan kecederaan remuk  
*Major traumatic amputations and crush injuries*
- Pengurusan dislokasi akut dengan dan tanpa patah  
*Management of acute dislocations with and without fractures*
- Pengurusan komplikasi patah tulang lewat (umum/setempat) – VTE, mal-union, non-union  
*Management of late fracture complications (general/local) – VTE, mal-union, non-union*
- Pengurusan jangkitan berkaitan implan  
*Management of implant-associated infection*
- Pengurusan kecederaan neurovaskular  
*Management of neurovascular injuries*
- Pengurusan kepatahan terbuka  
*Management of open fractures*
- Pengurusan kecederaan pelvis – akut  
*Management of pelvis injuries – acute*
- Pengurusan kecederaan pelvis – definitif  
*Management of pelvis injuries – definitive*
- Pengurusan arthritis septik  
*Management of septic arthritis*
- Pengurusan pesakit politrauma – ETC, DCO  
*Management of polytrauma patients – ETC, DCO*
- Pemasangan plat pada patah tulang panjang  
*Plating of long bone fractures*
- Sequestrectomy / reseksi tulang pada osteomyelitis  
*Sequestrectomy / bone resection in osteomyelitis*
- Trauma tulang belakang – penilaian segera pesakit dengan kemungkinan kecederaan tulang serviks belakang  
*Spinal trauma – urgent assessment of patient with possible cervical spine injury*
- Pemindahan kulit terpisah (split skin grafting)  
*Split skin grafting*
- Pendawaian jalur ketegangan– patela, olecranon  
*Tension band wiring – patella, olecranon*
- Penstabilan luaran uniaxial anggota badan  
*Uniaxial external fixation of extremities*

- Anestesia setempat tanpa tourniquet dalam keadaan sedar sepenuhnya (WALANT)  
*Wide Awake Local Anaesthesia No Tourniquet (WALANT)*
  
- Bahu & Siku / *Shoulder & Elbow*
  - Fiksasi kepatahan tulang kompleks intra-artikular pada bahu dan siku  
*Fixation of complex intra-articular fractures of the shoulder and elbow*
  - Fiksasi kepatahan tulang bahu, humerus dan siku dengan atau tanpa pembaikan ligamen – termasuk IM pemakuan  
*Fracture fixation of the shoulder, humerus and elbow with or without ligamentous repair – including IM nailing*
  - Rawatan kepatahan-terkehel bahu dan siku secara bukan pembedahan  
*Treatment of fracture-dislocations of the shoulder and elbow – non-operative*
  - Rawatan kepatahan-terkehel bahu dan siku secara pembedahan  
*Treatment of fracture-dislocations of the shoulder and elbow – operative*
  - Amputasi anggota – suku hadapan, proksimal dan distal kepada siku, disartikulasian  
*Amputation – fore-quarter, proximal and distal to the elbow, disarticulation*
  - Arthrodesis bahu dan siku  
*Arthrodesis of the shoulder and elbow*
  
- Peha / *Hip*
  - Amputasi anggota – disartikulasi pinggul, bahagian belakang  
*Amputation – hip disarticulation, hindquarter*
  - Hemiartroplasti pinggul  
*Hip hemiarthroplasty*
  - Pemakuan IM lanjutan – contohnya femur proksimal, rekonstruksi, retrograde  
*Advanced intramedullary nailing – e.g. proximal femur, reconstruction, retrograde*
  - Rawatan kepatahan-terkehel pinggul  
*Treatment of fracture-dislocation of the hip*
  
- Lutut / *Knee*
  - Pemakuan IM lanjutan – suprakondilar, retrograde  
*Advanced intramedullary nailing – supracondylar, retrograde*
  - Cucian Arthroskopik arthritis septik lutut  
*Arthroscopic lavage of septic arthritis of the knee*
  - Disartikulasi lutut  
*Disarticulation of the knee*
  - Fiksasi ACL atau PCL avulsi  
*Fixation of ACL or PCL avulsion*
  - Fiksasi kepatahan tulang kompleks intra-artikular lutut  
*Fixation of complex intra-articular knee fractures*
  - Fiksasi kepatahan-terkehel lutut  
*Fixation of fracture-dislocations of the knee*

Rujukan / *References*:

1. AO surgical reference: <https://surgeryreference.aofoundation.org>
2. Frederick M Azar & S. Terry Canale & James H. Beaty (2020) Campbell's Operative Orthopaedics, 4-Volume Set (14th Edition). Elsevier.
3. Stanley Hoppenfeld, piet deBoer, Richard Buckley (2009), Surgical Exposures in Orthopaedics: The Anatomic Approach (4th Edition). Lippincott Williams & Wilkins 4. Anand J. Thakur (2019), The elements of fracture fixation (4th Edition).

## 2.2 KECEDERAAN SUKAN & ARTROSKOPIK *SPORTS INJURY & ARTHROSCOPIC*

- Sains Asas – anatomi, biomekanik dan patologi  
*Basic Science – anatomy, biomechanics, and pathology*
- Artroskopi / *Arthroscopy*
  - Prinsip artroskopi  
*Principles of arthroscopy*
  - Indikasi dan kontraindikasi  
*Indications and contraindications*
  - Prosedur standard dan tambahan untuk pemeriksaan lutut dan skop bahu  
*Standard procedures and additional for knee and shoulder scope*
  - Persediaan artroskopi dan posisi pesakit  
*Arthroscopic setup and patient positioning*
  - Komplikasi pembedahan artroskopi  
*Complications of arthroscopic surgery*
- Kecederaan dan keadaan lutut  
*Knee injuries and conditions*
  - Termasuk bursitis, kecacatan kartilaj artikular, patah avulsi, kecederaan ligamen, kecederaan meniskus, penyakit Osgood-Schlatter, gangguan patella-femoral dan lain-lain  
*Including bursitis, articular cartilage defects, avulsion fractures, ligamentous injuries, meniscal injuries, Osgood-Schlatter disease, patella-femoral disorders, and others*
- Keadaan / penyakit / patologi dan pengurusan bahu  
*Shoulder conditions/diseases/pathology and management*
  - Termasuk kecederaan akromioklavikular, kapsulitis adhesif (bahu beku), tendonitis kalkifikasi, dislokasi dan ketidakstabilan bahu, kecederaan rotator cuff, disosiasi skapulotorasik, impingement bahu dan lain-lain  
*Including acromioclavicular injuries, adhesive capsulitis (frozen shoulder), calcific tendonitis, shoulder dislocation and instability, rotator cuff injuries, scapulothoracic dissociation, shoulder impingement, and others*
- Keadaan / penyakit / patologi dan pengurusan siku  
*Elbow conditions/diseases/pathology and management*
  - Termasuk dislokasi dan ketidakstabilan siku dan lain-lain  
*Including elbow dislocation and instability, and others*

- Sindrom penggunaan berlebihan dan pengurusan  
*Overuse syndrome and management*
  - Termasuk epicondylitis medial dan lateral, impingement femoro-asetabular, snapping hip, bursitis trokanterik dan lain-lain  
*Including medial and lateral epicondylitis, femoro-acetabular impingement, snapping hip, trochanteric bursitis, and others*
  
- Pengetahuan asas dalam Perubatan Sukan dan rehabilitasi  
*Fundamental knowledge in Sports Medicine and rehabilitation*

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## 2.3 KAKI & BUKU LALI

### FOOT & ANKLE

#### ➤ Trauma | *Trauma*

- Patah Pilon  
*Pilon fracture*
- Patah Talus  
*Talus fracture*
- Patah Kalkaneum  
*Calcaneum fracture*
- Kecelakaan Lisfranc  
*Lisfranc injury*
- Patah Metatarsal  
*Metatarsal fracture*
- Anggota hancur (Mangled limbs)  
*Mangled limbs*
- Kecelakaan / tendinopati tendon Achilles  
*Achilles tendon injury / tendinopathy*
- Kecelakaan tendon peroneal  
*Peroneal tendon injury*
- Keseleo / kecederaan buku lali (tinggi dan rendah)  
*High and low ankle sprain / injury*
- Patah malleolus  
*Malleoli fracture*
- Dislokasi buku lali  
*Ankle dislocation*

#### ➤ Bukan Trauma | *Non-Trauma*

- Kaki diabetes  
*Diabetic foot*
- Neuropati Charcot  
*Charcot's neuropathy*
- Fasciitis nekrotik  
*Necrotizing fasciitis*
- Osteoarthritis buku lali  
*Ankle osteoarthritis*
- Hallux valgus dan kecacatan kaki hadapan  
*Hallux valgus and forefoot deformities*
- Kecacatan angular  
*Angular deformities*
- Artopati keradangan  
*Inflammatory arthropathies*
- Pes planus (kaki rata)  
*Pes planus (flat foot)*

- Pes cavus (lengkungan kaki tinggi)  
*Pes cavus (high-arched foot)*
- Kuku cengkam  
*In-growing toenail*
- Plantar fasciitis  
*Plantar fasciitis*

#### Prosedur Penting / *Essential Procedures*

- Pembersihan luka  
*Wound debridement*
- Amputasi seperti Ray, transmetatarsal, Chopart, Lisfranc, Syme, BKA, AKA  
*Amputations e.g. Ray, transmetatarsal, Chopart, Lisfranc, Syme, Below Knee Amputation (BKA), Above Knee Amputation (AKA)*
- Fiksasi kepatahan intra-artikular kompleks kaki dan buku lali  
*Fixation of complex intra-articular foot and ankle fractures*
- Fiksasi kepatahan ekstra-artikular kalkaneum, talus dan tulang tarsal lain yang ringkas  
*Fixation of extra-articular calcaneal, simple talar, and other simple tarsal bone fractures*
- Fiksasi kepatahan-dislokasi kaki dan buku lali dengan atau tanpa pembaikan ligament  
*Fixation of fracture-dislocations of foot and ankle with or without ligament repair*
- Pembedahan tendon kaki terbuka dan buku lali termasuk tendon Achilles, ligamen dan otot  
*Open repair of foot and ankle tendons including Achilles tendon, ligaments, and muscles*
- ORIF (*Open Reduction and Internal Fixation*) untuk patah maleolus, metatarsal dan falanks  
*ORIF for malleolar, metatarsal and phalanx fractures*
- Rawatan perkutaneus tendon Achilles  
*Percutaneous repair of Achilles tendon*
- Pemanjangan tendon Achilles  
*Achilles tendon lengthening*
- Artroplasti reseksi kaki dan buku lali, kalkaneoplasti  
*Resection arthroplasty of foot and ankle, calcaneoplasty*
- Artroskopi buku lali – diagnostik dan prosedur terapeutik ringkas  
*Ankle arthroscopy – diagnostic and simple therapeutic procedures*
- Pembedahan Hallux valgus  
*Hallux valgus surgery*
- Pembedahan gabungan sendi interphalangeal  
*Interphalangeal fusions*
- Osteotomi falanks  
*Osteotomy of phalanges*
- Rekonstruksi disfungsi tendon tibialis posterior (PTTD)  
*Posterior Tibial Tendon Dysfunction (PTTD) reconstruction*
- Rekonstruksi ligamen talofibular anterior  
*Reconstruction of anterior talofibular ligament*

- Rawatan pembedahan kuku cengkam  
*Surgical treatment of ingrowing toenails*
- Pembedahan gabungan sendi tibiotalar dan kalkaneus (Tibiotalar-calcaneal fusion)  
*Tibiotalar calcaneal fusion*
- Triple fusion (pembedahan gabungan tiga sendi kaki)  
*Triple fusion*
- Fasciotomi kaki  
*Fasciotomy of foot*

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## 2.4 SPINAL SPINE

### Sains Asas / Basic Science

- Mengetahui langkah utama dalam sejarah penyakit tulang belakang.  
*Know the main steps in the history of spinal disorders.*
- Memahami prinsip biokimia tulang belakang dan biokimia peralatan tulang belakang.  
*Understand principles of spinal biomechanics and biomechanics of spinal instrumentation.*
- Mengetahui konsep biologi sel dalam tulang belakang, dan biologi penggabungan tulang belakang.  
*Know the concepts of cell biology in spine, and the biology of spinal fusion.*
- Memahami keseimbangan dan ketidakseimbangan tulang belakang.  
*Understand spinal balance and disbalance.*
- Memahami gambaran keseluruhan epidemiologi penyakit tulang belakang, meramal hasil rawatan dan fungsi tulang belakang.  
*Have an overview of the epidemiology of spinal disorders, predictors of treatment outcomes and the function of spine.*
- Mengetahui prinsip penilaian pra-pembedahan pesakit, termasuk pengimejan tulang belakang dan siasatan neurologi.  
*Know the principles of pre-operative assessment of a patient, including spinal imaging and neurological investigations.*
- Memahami konsep pengurusan anesthesiologi pesakit tulang belakang sebelum, semasa dan selepas pembedahan.  
*Understand the concepts of anaesthesiological management of a spine patient before, during and after surgery.*

### Topik / Topics:

- Biomekanik tulang belakang  
*Spinal biomechanics*
- Biologi sel tulang belakang  
*Cell biology of the spine*
- Perubahan tulang belakang berkaitan usia  
*Age-related changes of the spine*
- Perjalanan kepada kesakitan tulang belakang  
*Pathways to spinal pain*
- Genetik dalam penyakit tulang belakang  
*Genetics in spinal disorders*
- Perkembangan gangguan tulang belakang  
*Development of spinal disorders*
- Keseimbangan tulang belakang  
*Spinal balance*
- Biomekanik peralatan tulang belakang  
*Biomechanics of spinal instrumentation*
- Biologi dalam tulang belakang  
*Biology in spine*
- Ramalan hasil rawatan  
*Predictors of treatment outcome*

- Sejarah dan pemeriksaan fizikal  
*History and physical examination*
- Kajian pengimejan  
*Imaging studies*
- Penilaian neurologi  
*Neurological assessment*
- Siasatan neurofisiologi  
*Neurophysiological investigations*
- Penilaian pra-pembedahan  
*Preoperative assessment*
- Pengurusan anestesia semasa pembedahan  
*Intraoperative anaesthesia management*
- Penjagaan pra-pembedahan dan pengurusan kesakitan  
*Preoperative care and pain management*
- Peranan otot dalam kecacatan tulang belakang dewasa  
*The role of muscles in adult spine deformity*

#### Trauma Tulang Belakang / Spine Trauma

- Memahami epidemiologi, gejala, dan anatomi asas tulang belakang.  
*Understand the epidemiology, symptoms, and basic spine anatomy.*
- Meminta siasatan pengimejan yang sesuai.  
*Request appropriate imaging investigation.*
- Mengenal pasti dan mengklasifikasikan kecederaan dengan betul.  
*Correctly identify and classify the injury.*
- Mencadangkan strategi pengurusan yang sesuai.  
*Suggest an appropriate management strategy.*

#### Topik / Topics:

- Penilaian trauma serviks tulang belakang  
*Cervical spine trauma evaluation*
- Kecederaan arteri vertebralis  
*Vertebral artery injury*
- Kecederaan saraf tunjang  
*Spinal cord injuries*
- Kecederaan saraf tunjang tidak lengkap  
*Incomplete spinal cord injuries*
- Kecederaan saraf tunjang kanak-kanak  
*Paediatric spinal cord injuries*
- Pseudosubluksasi serviks tulang belakang  
*Pseudosubluxation of the cervical spine*
- Ketidakstabilan okzipitservikal  
*Occipitocervical instability*
- Fraktur kondil oksipital  
*Occipital condyle fracture*
- Fraktur atlas dan kecederaan ligamen transversal  
*Atlas fracture and transvers ligament injuries*

- Ketidakstabilan atlantoaksial  
*Atlantoaxial instability*
- Fraktur odontoid  
*Odontoid fracture*
- Spondilolistesis traumatik aksis  
*Traumatic spondylolisthesis of axis*
- Imobilisasi ortosis halo  
*Halo orthosis immobilization*
- Dislokasi dan fraktur faset serviks  
*Cervical facet dislocation and fracture*
- Fraktur badan vertebra serviks subaksial  
*Subaxial cervical vertebral body fracture*
- Fraktur tetesan air mata serviks kerana ekstensi  
*Extension teardrop fracture cervical spine*
- Fraktur Clay-shoveler  
*Clay-shoveler fracture*
- Traction serviks tertutup  
*Closed cervical traction*
- Fraktur pecah torakolumbar  
*Thoracolumbar burst fracture*
- Fraktur Chance  
*Chance fracture*
- Fraktur-dislokasi torakolumbar  
*Thoracolumbar fracture-dislocation*
- Fraktur mampatan vertebra osteoporotik  
*Osteoporotic vertebral compression fracture*
- Fraktur sakral  
*Sacral fractures*

### Penyakit Degeneratif Serviks Tulang Belakang

#### *Cervical spine degenerative disorders*

- Untuk memperolehi pengetahuan dalam menilai, mengevaluasi, dan mendiagnosis penyakit degeneratif serviks tulang belakang  
*to acquire knowledge to assess, evaluate, and diagnose degenerative cervical spine disorders.*
- Untuk mempelajari proses membuat keputusan bagi pelbagai modaliti rawatan  
*to learn decision-making processes for different treatment modalities.*
- Untuk mengetahui keberkesanan berdasarkan bukti dalam kepelbagaian modaliti rawatan  
*to understand the evidence supporting various treatment modalities.*
- Untuk membiasakan diri dengan prinsip pembedahan dan indikasi dalam rawatan penyakit degeneratif serviks tulang belakang  
*to become familiar with the surgical principles and indications in treating cervical spine degenerative disorders.*

## Topik / Topics:

- Anatomi pembedahan terapan kolum serviks tulang belakang, saraf tunjang, akar saraf dan arteri vertebralis  
*Applied surgical anatomy of the cervical spinal column, spinal cord, nerve roots and vertebral arteries*
- Pertimbangan biomekanikal tulang belakang serviks yang mengalami degenerasi  
*Biomechanical consideration of the degenerative cervical spine*
- Penyakit degeneratif serviks tulang belakang  
*Degenerative disorders of the cervical spine*
- Sakit leher aksial  
*Axial neck pain*
- Pengurusan konservatif sakit leher aksial  
*Axial neck pain conservative management*
- Pengurusan pembedahan sakit leher aksial  
*Axial neck pain surgical management*
- Penemuan klinikal, patofisiologi dan sejarah semula jadi radikulopati serviks  
*Clinical finding, pathophysiology and natural history of cervical radiculopathy*
- Pengurusan konservatif radikulopati serviks  
*Cervical radiculopathy conservative management*
- Pengurusan pembedahan radikulopati serviks  
*Cervical radiculopathy surgical management*
- Penyakit cakera bersebelahan dan pengurusan TDR serviks  
*Adjacent disc disease and management of cervical TDR*
- Patofisiologi, penemuan klinikal dan pencitraan mielopati serviks  
*Pathophysiology, clinical findings and imaging of cervical myelopathy*
- Pengurusan konservatif mielopati serviks  
*Cervical myelopathy conservative management*
- Pengurusan pembedahan mielopati serviks  
*Cervical myelopathy surgical management*
- Mielopati serviks OPLL  
*Cervical myelopathy OPLL*

## Penyakit degeneratif lumbar / Lumbar degenerative disorders

- Untuk memperolehi pengetahuan menilai, menilai semula dan mendiagnosis penyakit degeneratif pada tulang belakang torakolumbar.  
*To acquire the knowledge to assess, evaluate and diagnose degenerative disorders of the thoracolumbar spine.*
- Untuk mempelajari proses membuat keputusan dalam memilih kepelbagaian modaliti rawatan.  
*To learn the decision making to select different treatment modalities.*
- Untuk mengetahui berdasarkan bukti bagi kepelbagaian modaliti rawatan.  
*To know the evidence for the different treatment modalities.*
- Untuk memahami prinsip pembedahan dan indikasi rawatan bagi penyakit degeneratif tulang belakang torakolumbar.  
*To understand the surgical principles of and the indications for the treatment of degenerative disorders of the thoracolumbar spine.*

## Topik / Topics:

- Gejala klinikal dan pemeriksaan diagnostik  
*Clinical presentation and diagnostic examination*
- Pengkelasan cakera herniasi  
*Classification of disc herniation*
- Mielopati toraks  
*Thoracic myelopathy*
- Pengurusan konservatif cakera lumbar herniasi  
*Lumbar disc herniation conservative management*
- Pengurusan pembedahan cakera lumbar herniasi  
*Lumbar disc herniation surgical management*
- Pengimejan toraks dan cakera lumbar herniasi dan stenosis  
*Imaging in thoracic and lumbar disc herniation and stenosis*
- Herniasi cakera toraks  
*Thoracic disc herniations*
- Gejala stenosis lumbar dan sejarah semula jadi  
*Lumbar stenosis presentation and natural history*
- Rawatan konservatif stenosis lumbar  
*Lumbar stenosis conservative treatment*
  
- Rawatan pembedahan stenosis lumbar  
*Lumbar stenosis surgical treatment*
- Pengimejan dalam keadaan degeneratif lumbar dan sakroiliak  
*Imaging in degenerative lumbar and sacroiliac conditions*
- Spondylolisthesis degeneratif  
*Degenerative spondylolisthesis*
- Rawatan pembedahan spondylolisthesis degeneratif  
*Degenerative spondylolisthesis surgical treatment*
- Kontinuum dari keadaan degeneratif ke deformiti  
*Continuum from degenerative condition to deformity*
- Sakit sendi sakroiliak  
*Sacroiliac joint pain*
- Pengurusan sakit belakang bahagian bawah tidak spesifik  
*Management of non-specific low back pain*

## Tumor tulang belakang / Spine tumors

- Memahami biologi dan patofisiologi keadaan neoplastik yang menjejaskan kolum tulang belakang dan struktur neural yang berkaitan.  
*Understand biology and pathophysiology of neoplastic conditions affecting the spinal column and associated neural structures.*
- Membolehkan pemilihan berdasarkan kes untuk pengimejan dan kerja diagnostik makmal yang sesuai bagi pesakit yang hadir dengan keadaan neoplastik primer dan sekunder pada kolum tulang belakang dan struktur neural yang berkaitan.  
*Enable case-based selection of appropriate imaging and laboratory diagnostic work up for patients presenting with primary and secondary neoplastic conditions of the spinal column and associated neural structures.*

- Merumuskan strategi rawatan berasaskan bukti untuk keadaan neoplastik primer dan sekunder tulang belakang mengikut prinsip kestabilan, niat penyembuhan atau paliatif dan agresiviti neoplastik.  
*Formulate evidence-based treatment strategies for primary and secondary neoplastic conditions of the spine in accordance with principles of stability, curative or palliative intent and neoplastic aggression.*

Topik / Topics:

- Tumor intradural ekstramedullari  
*Intradural extramedullary tumors*
- Tumor intradural intramedullari  
*Intradural intramedullary tumors*
- Tumor ekstradural  
*Extradural tumors*
- Osteoid osteoma  
*Osteoid osteoma*
- Granuloma eosinofilik  
*Eosinophilic granuloma*
- Kehidupan awal tumor tulang belakang  
*Early life spinal tumors*
- Tumor primer sakrum  
*Primary tumors of sacrum*
- Kordoma tulang belakang  
*Chordoma of spine*
- Kista tulang aneurysmal tulang belakang  
*Aneurysmal bone cyst of spine*
- Kondrosarkoma tulang belakang  
*Chondrosarcoma of the spine*
- Tumor sel gergasi  
*Giant cell tumors*
- Mieloma pelbagai tulang belakang  
*Multiple myeloma of the spine*
- Reseksi multisegmental dan rekonstruksi untuk tumor tulang belakang  
*Multisegmental resection and reconstruction for tumors of the spine*
- Malformasi vaskular tulang belakang  
*Spinal vascular malformations*
- Metastasis tulang belakang – diagnosis dan penandaan  
*Spinal metastasis – diagnosis and staging*
- Metastasis tulang belakang – pilihan rawatan dan hasil  
*Spinal metastasis – treatment options and results*
- Pengurusan tumor tulang belakang residual  
*Management of residual spinal tumors*

## Jangkitan dan keradangan tulang belakang / *Spine infection and inflammation*

- Memahami biologi dan patofisiologi keadaan keradangan dan jangkitan pada kolum tulang belakang.  
*Understand biology and pathophysiology of inflammatory and infectious conditions of the spinal column.*
- Membolehkan pengimejan dan kerja makmal yang sesuai untuk menentukan diagnosis berdasarkan perbezaan kes.  
*Enable appropriate imaging and laboratory work-up to establish case based differential diagnosis.*
- Merancang strategi pengurusan perubatan dan pembedahan berasaskan bukti yang sesuai untuk keadaan keradangan dan jangkitan pada kolum tulang belakang, termasuk indikasi dan teknik untuk intervensi pembedahan segera.  
*Formulate appropriate evidence based medical and surgical management strategies for inflammatory and infectious disorders of the spinal column, including indication and techniques for urgent surgical intervention.*

### Topik / Topics:

- Tuberkulosis tulang belakang – patofisiologi dan ciri klinikal  
*Spinal tuberculosis – pathophysiology and clinical features*
- Tuberkulosis tulang belakang – ujian diagnostik dan pengurusan perubatan  
*Spinal tuberculosis – diagnostic test and medical management*
- Tuberkulosis tulang belakang – pengurusan pembedahan  
*Spinal tuberculosis – surgical management*
- Jangkitan tulang belakang– perbezaan diagnosis, prinsip membuat keputusan rawatan  
*Spinal infections – differential diagnosis, treatment decision principles*
- Rawatan jangkitan pada instrumentasi tulang belakang  
*Treatment of infection in spinal instrumentations*
- Rawatan antibiotik untuk vertebra om, diskitis dan abses epidural  
*Antibiotic treatment of vertebra om, discitis and epidural abscess*
- Rawatan antibiotik untuk jangkitan luka tulang belakang  
*Antibiotic treatment of spinal wound infections*
- Spondylitis ankylosing  
*Ankylosing spondylitis*
- Ketidakstabilan tulang belakang okkipito-atlantoaksial dalam artritis reumatoid  
*Instability of occipito-atlantoaxial spine in rheumatoid arthritis*
- Pengurusan pembedahan serviks tulang belakang subaksial dalam artritis reumatoid  
*Surgical management of subaxial cervical spine in rheumatoid arthritis*
- Diffuse Idiopathic Skeletal Hyperostosis - DISH  
*Diffuse Idiopathic Skeletal Hyperostosis - DISH*

## Deformiti tulang belakang dewasa / *Adult spine deformity*

- Memahami etiopatogenesis dan sejarah semula jadi deformiti tulang belakang dewasa dari sebarang punca.  
*Understand the etiopathogenesis and natural history of adult spinal deformities of any origin.*
- Maklum dan memahami pelbagai sistem pengelasan dalam deformiti dewasa.  
*Be aware of and understand the different classification systems in adult deformities.*
- Pengetahuan lengkap dan terkini sentiasa diperolehi tentang deformiti tulang belakang dewasa dari segi pemahaman baru mengenai sejarah semula jadi dan pilihan rawatan baru.  
*Complete and up-to-date knowledge is constantly being gained about adult spinal deformities in terms of new understanding of natural history and new treatment options.*
- Membiasakan diri dengan kepelbagaian modaliti pengimejan yang digunakan untuk membuat keputusan berorientasikan rawatan.  
*Become familiar with the different imaging modalities which are used to make treatment-oriented decisions.*
- Memahami dengan khusus biomekanik fiksasi berinstrumen untuk pembetulan dan penstabilan deformiti dewasa yang kompleks.  
*Understand in particular the biomechanics of the instrumented fixation of complex adult deformity correction and stabilization.*
- Mengenalpasti kepentingan utama keseimbangan dalam tulang belakang dewasa dan khususnya, keseimbangan sagittal.  
*Recognise the paramount importance of balance in the adult spine and in particular, sagittal balance.*
- Belajar untuk menentukan dengan tepat indikasi pembedahan berdasarkan penilaian objektif dan algoritma diagnostik.  
*Learn to define precisely surgical indications based on objective evaluation and diagnostic algorithms.*
- Mengenalpasti had modaliti rawatan konservatif.  
*Recognise the limitations of conservative treatment modal*

### Topik / Topics:

- Skoliosis degeneratif  
*Degenerative scoliosis*
- Perancangan teknik pembetulan deformiti  
*Planning deformity correction technique*
- Osteotomi tulang belakang untuk pembetulan deformiti dewasa  
*Osteotomies of the spine for adult deformity correction*
- Pilihan fiksasi pelvik  
*Pelvic fixation options*
- Pilihan gabungan antara badan – TLIF, OLIF, ALIF, LLIF  
*Interbody fusion options – TLIF, OLIF, ALIF, LLIF*
- Scheuermann dan kifosis idiopatik  
*Scheuermann's and idiopathic kyphosis*
- Spondylitis ankylosing  
*Ankylosing spondylitis*
- Kifosis angular dewasa  
*Adult angular kyphosis*
- Keseimbangan sagittal dalam spondylolisthesis L5-S1  
*Sagittal balance in L5-S1 spondylolisthesis*

- Pengimejan dalam spondylolisthesis  
*Imaging in spondylolisthesis*
- Pilihan penggabungan spondylolisthesis  
*Spondylolisthesis fusion options*

#### Deformiti tulang belakang kanak-kanak / *Paediatric spine deformity*

- Memahami patogenesis dan sejarah semula jadi deformiti tulang belakang kanak-kanak dan remaja tanpa mengira etiologi.  
*Understand pathogenesis and natural history of paediatric and adolescent deformities of any etiology.*
- Pengetahuan yang lengkap dan terkini mengenai anomali saraf tunjang dan kecacatan kongenital pada pesakit kanak-kanak.  
*Complete and up-to-date knowledge of spinal cord anomalies and congenital deformities in paediatric patients.*
- Mempelajari pengimejan khusus dan biomekanik deformiti tulang belakang.  
*Learn about specific imaging and biomechanics of spinal deformities.*
- Memahami indikasi dan prinsip rawatan konservatif dalam deformiti tulang belakang kanak-kanak.  
*Understand indications and principles of conservative treatment in paediatric spinal deformities.*
- Mempelajari prinsip rawatan pembedahan dan menghuraikan kepelbagaian pendekatan serta strategi pembedahan untuk membetulkan deformiti kanak-kanak.  
*Learn principles for surgical treatment and describe the different surgical approaches and strategies to correct paediatric deformities.*

#### Topik / Topics:

- Skoliosis idiopatik  
*Idiopathic scoliosis*
- Skoliosis awal (early onset)  
*Early onset scoliosis*
- Skoliosis sekunder  
*Secondary scoliosis*
- Deformiti kongenital  
*Congenital deformities*
- Anomali saraf tunjang – disrafisme tulang belakang  
*Spinal cord anomalies – spinal dysraphism*
- Biomekanik tulang belakang yang mengalami deformiti  
*Biomechanic of deformed spine*
- Penilaian klinikal bagi deformiti  
*Clinical assessment of deformities*
- Peranan rawatan dengan pembalut (*cast*) dan daya tarikan halo  
*Role of cast treatment and halo traction*
- Indikasi untuk rawatan dengan pendakap (*brace*)  
*Indication of brace treatment*
- Penilaian pra-pembedahan dan perancangan pembedahan  
*Pre-operative assessment and surgical planning*

- Kedudukan pesakit dan penjimatan darah  
*Patient positioning and blood saving*
- Pemantauan neuro intraoperatif  
*Intraoperative neuromonitoring*
- Penyatuan tulang dalam deformiti tulang belakang  
*Bone fusion in spinal deformity*
  
- Indikasi untuk pendekatan anterior  
*Indication for anterior approach*
- Indikasi untuk pendekatan posterior  
*Indication for posterior approach*
- Konstur hibrid  
*Hybrid construct*
- Pilihan fiksasi iliosakral  
*Iliosacral fixation options*

Rujukan / References:

1. Azar FM, Canale ST, Beaty JH. (2020) Campbell's Operative Orthopaedics (14th Edition) Elsevier Health Sciences.
1. Blom A, Warwick D, Whitehouse M. (2017), Apley & Solomon system of orthopaedics and trauma (10th Edition). CRC Press.
1. De Boer P, Buckley R, Hoppenfeld S. (2021) Surgical exposures in orthopaedics: the anatomic approach (6th Edition). Lippincott Williams & Wilkins.
2. Bridwell KH, DeWald RL. (2011), The textbook of spinal surgery (3rd Edition) Wolters Kluwer Health Lippincott Williams & Wilkins. 5. Vaccaro AR, Baron EM (2012) Operative Techniques: Spine Surgery, (2nd Edition) Elsevier Health Sciences.

## 2.5 PEMBEDAHAN TANGAN & MIKRO *HAND & MICROSURGERY*

- Kecelakaan pleksus brakial  
*Brachial plexus injury*
- Keabnormalan kongenital anggota atas  
*Congenital abnormalities of the upper limb*
- Dislokasi dan kecederaan ligamen anggota atas  
*Dislocation and ligamentous injuries of the upper limb*
- Kecelakaan hujung jari dan dasar kuku  
*Fingertip and nailbed injuries*
- Jangkitan pada tangan dan anggota atas  
*Infections in the hand and upper limb*
- Keadaan keradangan yang menjejaskan tangan  
*Inflammatory conditions affecting the hand*
- Keadaan saraf periferi pada anggota atas  
*Peripheral nerve conditions in the upper limb*
- Tendinopati dan kecederaan tendon  
*Tendinopathies and tendon injuries*
- Tumor tangan  
*Tumours of the hand*
- Keadaan dan kecederaan vaskular  
*Vascular conditions and injuries*

### Rujukan / References:

1. Karthikeyan, G. (2013). *Manual of Reconstructive Hand Surgery (1st Edition)*. New Delhi: Jaypee.
2. Kevin C Chung (2017). *Operative Techniques: Hand and Wrist Surgery (3rd Edition)*. Philadelphia: Elsevier.
3. Tang, J.B., Amadio, P.C., Guimberteau, J.C., Chang, J. (2012). *Tendon Surgery of the Hand (1st Edition)*. Philadelphia: Saunders Elsevier.
4. Trumble, T., Budoff, J., Cornwall, R. (2006). *Core Knowledge in Orthopaedics: Hand, Elbow and Shoulder*. St Louis, Mo.: Mosby.
5. Venkataswami, R. (2009). *Surgery of the Injured Hand: Towards Functional Restoration*. New Delhi: Jaypee.
6. Wolfe, S., Pederson, W., Kozin, S.H., Cohen, M. (2017). *Green's Operative Hand Surgery (7th Edition)*. Philadelphia: Elsevier.

## 2.6 ORTOPEDIK PEDIATRIK *PAEDIATRIC ORTHOPAEDIC*

### Pembedahan Ortopedik Pediatrik Am / *General Paediatric Orthopaedic Surgery*

- Trauma rangka pediatrik  
*Pediatric skeletal trauma*
- Variasi dan gangguan perkembangan  
*Developmental variants and disorder*
- Jangkitan tulang dan sendi  
*Infection of bone and joint*
- Gangguan neuromuskular  
*Neuromuscular disorder*
- Perbezaan kepanjangan anggota  
*Limb length discrepancy*
- Displasia rangka  
*Skeletal dysplasia*
- Kekurangan anggota secara kongenital  
*Congenital limb deficiency*
- Tumor asas muskuloskeletal dalam kalangan kanak-kanak  
*Basic musculoskeletal tumors in children*
- Kecederaan asas sukan dalam kalangan kanak-kanak  
*Basic sports injury in children*
- Gangguan asas tulang belakang dalam kalangan kanak-kanak  
*Basic spine disorder in children*
- Deformiti kaki kongenital  
*Congenital foot deformities*
- Deformiti angular pediatrik  
*Pediatric angular deformities*
- Keadaan pinggul pediatrik  
*Pediatric hip conditions*
- Kecederaan trauma biasa pada siku kanak-kanak  
*Common traumatic elbow injuries*

### Sains asas dalam Pembedahan Ortopedik Pediatrik / *Basic Science in Paediatric Orthopaedic Surgery*

- Fisis  
*Physis*
- Kecederaan plat pertumbuhan – pemeliharaan vs pengorbanan *physeal*  
*Growth plate injury – physeal sparing vs sacrificing*
- Penyembuhan dan penyesuaian semula kepatahan tulang pediatrik  
*Pediatric fracture healing and remodeling*
- Kadar pertumbuhan rangka, ramalan dan anggaran  
*Skeletal growth rate, prediction & estimation*
- Variasi perkembangan, profil putaran dan profil *genu varum*  
*Developmental variants, rotational profile and genu varum profile*
- Sakit berujukan dari pinggul  
*Referred pain from the hip*
- Patoanatominya bagi keadaan biasa  
*Pathoanatomy of common condition*

- DDH, *Clubfoot*, Perthes, SCFE, arthritis septik  
*DDH, Clubfoot, Perthes, SCFE, Septic arthritis*
- Osteogenesis gangguan (*distraction osteogenesis*)  
*Distraction osteogenesis*
- Prinsip pembetulan osteotomi dalam deformiti angular  
*Principle of osteotomy correction on angular deformity*
- Penetapan monolateral dan cincin dalam rekonstruksi anggota  
*Monolateral and ring fixators in limb reconstruction*
- Implan dalam ortopedik pediatrik  
*Implants in pediatric orthopedics*
- Plat, rod Rush, paku fleksibel, paku boleh kembang  
*Plate, rush rod, flexible nail, expandable nail*
- Plat CAPOS, plat 8 (*eight-plate*)  
*CAPOS plate, 8-plate*
- Osteogenesis imperfecta dan ricket renal  
*Osteogenesis imperfecta and renal rickets*
- Kestabilan patela  
*Patella stability*

#### Penilaian dan pemeriksaan / *Assessment and examination*

- Gaya berjalan / *Gait*
  - Kadar langkah, panjang langkah, panjang rentak  
*Cadence, step length, stride length*
  - Kaki pendek, *Trendelenburg, antalgic, waddling*  
*Short leg, Trendelenburg, antalgic, waddling*
  - Bongkok, lompat, *calcaneus, equinous, pseudoequinous*  
*Crouch, jump, calcaneus, equinous, pseudoequinous*
- Radiologi patah tulang dan keadaan pediatrik / *Radiological of fracture and pediatric condition*
  - Kecederaan plat pertumbuhan, *greenstick, torus, Cozen*, kecederaan siku  
*Physeal injury, greenstick, torus, Cozen, elbow injuries*
  - Kecederaan bukan kemalangan, *Perthes, SCFE, ricket, osteogenesis imperfecta*  
*Non-accidental injury, Perthes, SCFE, ricket, osteogenesis imperfecta*
  - Indeks migrasi Reimers dalam CP  
*Reimers migration index in CP*
  - Sudut CP-Tardieu, kontraktur vs spastik  
*CP-Tardieu angle, contracture vs spasticity*
  - Bertubuh pendek  
*Short stature*
  - Genu varus/valgus – ujian kestabilan, tujahan sisi, kebolehbetulan  
*Genu varus/valgus – stability test, lateral thrust, correctability*
  - Tortikolis  
*Torticollis*

- DDH – ujian Ortolani, Barlow, pemendekan  
*DDH – Ortolani, Barlow, shortening*
- *Spina bifida*  
*Spinal bifida*
- Tahap neurosegmental, deformiti kaki, fungsi kuadriseps  
*Neurosegmental level, foot deformity, quadriceps function*
- Risiko pada pinggul  
*Hip at risk*
- Kecelakaan bukan kemalangan (nonaccidental injury)  
*Nonaccidental injury*
- Pengukuran percanggahan kepanjangan kaki (LLD), penilaian abduksi/adduksi kekal  
*Leg Length Discrepancy (LLD) measurement, fixed abduction/adduction assessment*
- Riket  
*Ricket*
- Kaki  
*Foot*
- *Cavus* – ujian blok  
*Cavus - block test*
- *Equinovarus* – *tibialis posterior vs tibialis anterior*  
*Equinovarus – tibialis posterior vs tibialis anterior*
- Penilaian kaki rata  
*Flat foot assessment*
- Fleksibel vs kaku  
*Flexible versus rigid*
- Keadaan pediatrik lain: Sindrom Ehler-Danlos, Klippel-Feil, Sindrom Marfan, Neurofibromatosis, penyakit neuromuscular  
*Other paediatric condition: Ehler-Danlos syndrome, Klippel-Feil, Marfan's syndrome, Neurofibromatosis, neuromuscular disease*

#### Pengurusan Masalah Utama / *Management of Primary Problem*

##### Kepatahan tulang pediatrik / *Paediatric fracture*

- Pengurusan kecederaan plat pertumbuhan  
*Management of growth plate injury*
- Patah metafisis – *supracondylar humerus*  
*Metaphyseal fracture – supracondylar humerus*
- Patah batang tulang (*shaft fracture*)  
*Shaft fracture*
- Patah epifisis – patah kondil lateral  
*Epiphyseal fracture – lateral condyle fracture*

Pemindahan tendon dan tenotomi / *Tendon transfer and tenotomy*

- Pemindahan penuh vs pemindahan separa  
*Total versus split transfer*

Pinggul – DDH: *Chiari vs Salter / Hip DDH: Chiari vs Salter*

- CP dan pinggul *spina bifida*  
*CP and spina bifida hip*
- Abduksi berengsel dalam penyakit Perthes  
*Hinged abduction in Perthes*

Pinggul – SCFE / *Hip SCFE*

- Kaedah fiksasi dengan pin  
*Pin fixation method*
- Pertimbangkan pengurangan terbuka (*KIV open reduction*)  
*KIV open reduction*
- Rawatan untuk deformiti sisa  
*Residual deformity treatment*
- Pembedahan dislokasi pinggul yang selamat  
*Safe surgical hip dislocation*

Lutut / *Knee*

- Ketidakstabilan patela / ketidakselarasan / rekonstruksi  
*Patella instability / malalignment / reconstruction*
- Meniskus diskoid  
*Discoid meniscus*
- Kecederaan osteokondral  
*Osteochondral injury*
- Deformiti fleksi tetap dalam AMC (*arthrogryposis multiplex congenita*)  
*Fixed flexion deformity in AMC*
- Hemofilia  
*Haemophilia*
- Penyakit Blount  
*Blount disease*
- Osteotomi, elevasi plat tibia, reseksi palang plat pertumbuhan, fiksasi  
*Osteotomy, tibial plateau elevation, physeal bar resection, fixation*

Kekurangan anggota / *Limb deficiency*

- Hemimelia tibia  
*Tibia hemimelia*
- Hemimelia fibula  
*Fibula hemimelia*
- Kekurangan Fokus Femoral Proksimal  
*Proximal Femoral Focal Deficiency (PFFD)*

## Pseudarthrosis Kongenital Tibia / *Congenital Pseudarthrosis of the Tibia (CPT)*

- Reseksi, teknik fiksasi  
*Resection, fixation technique*

## Kaki / Foot

- *Congenital Talipes Equinovarus / Clubfoot (CTEV)*  
*Congenital Talipes Equinovarus / Clubfoot (CTEV)*
- Talus menegak  
*Vertical talus*
- Kaki kavus – pembetulan *hindfoot* atau tidak  
*Cavus foot – to correct hindfoot or not*
- Deformiti berulang  
*Recurrent deformity*
- Kaki *Arthrogryposis Multiplex Congenita (AMC)*  
*Arthrogryposis Multiplex Congenita (AMC) foot*

## Penyakit tulang metabolik / *Metabolic bone disease*

- Kelebihan operasi Sofield-Millar dengan/ tanpa pamidronat  
*Benefit of Sofield-Millar operation +/- pamidronate*
- Pertumbuhan berpandu (*guided growth*)  
*Guided growth*
- Penetapan intramedulari vs alat pengurang beban  
*Intramedullary fixation versus load sparing device*

## Displasia rangka / *Skeletal dysplasia*

- Pemanjangan bagi kanak-kanak bertubuh pendek  
*Lengthening in short stature*
- Pembetulan deformiti angular  
*Angular deformity correction*
- *Coxa vara*  
*Coxa vara*

## Masalah dalam bayi sindromik / *Problems in syndromic babies*

### Polidaktili dan sindaktili / *Polydactyly and syndactyly*

### Hallux varus, jari keriting, perikatan tarsal / *Hallux varus, curly toe, tarsal coalition*

Rujukan / *References*:

1. Ashley Blom (Editor), David Warwick (Editor), Michael Whitehouse (2017), Apley & Solomon system of orthopaedics and trauma (10th Edition). CRC Press.
2. John Herring (2020), Tachdjian's Pediatric Orthopaedics: From the Texas Scottish Rite Hospital for Children (6th Edition). Elsevier.
3. Dr. Mohammad Diab (Author), Lynn T. Staheli MD (2013), Practice of Paediatric Orthopaedics (3rd Edition). LWW.
4. Alexander Kirienko, Angelo Villa, Jason J. Calhoun (2003), Ilizarov Technique for Complex Foot and Ankle Deformities. (1st Edition). CRC Press.
5. Benjamin Joseph, Selvadurai Nayagam, Randall LoderEs (2022) Essential Paediatric Orthopaedic Decision Making. A Case-Based Approach. (1st Edition). CRC Press.

## 2.7 TRAUMA MUSKULOSKELETAL LANJUTAN & PEMBEDAHAN PEMBINAAN SEMULA MEMPANJANGKAN ANGGOTA

### ADVANCED MUSCULOSKELETAL TRAUMA & LIMB LENGTHENING RECONSTRUCTION SURGERY

#### Biologi dan Pembedahan Pelvis / *Biology and Pelvic Surgery*

- Biologi tulang dan tisu  
*Biology of bones and tissues*
- Patologi dan penyembuhan kepatahan tulang  
*Fracture pathology and healing*
- Kepatahan tulang tidak bersambung (non-union)  
*Fracture non-union*
- Cantuman tulang  
*Bone grafting*
- Regangan Osteogenesis  
*Distraction osteogenesis*
- Daya tarikan vektor  
*Vector traction*

#### Pembedahan pelvis dan asetabulum / *Pelvis and acetabular surgery*

- Mekanisme kecederaan pelvis dan asetabulum  
*Mechanism of pelvis and acetabular injuries*
- Pengelasan kepatahan tulang pelvis dan asetabulum  
*Classification of pelvis and acetabular fractures*
- Penilaian radiografik bagi kepatahan pelvis dan asetabulum  
*Radiographic evaluation of pelvic and acetabular fractures*
- Penggunaan pengapit C (C-clamp) dalam kepatahan tulang pelvis yang tidak stabil  
*C clamp in unstable pelvic fractures*
- Penstabilan kecederaan cincin pelvis menggunakan fiksator luaran  
*Stabilisation of pelvic ring injury using external fixator*
- Kecederaan cincin pelvis  
*Pelvic ring injuries*
- Kepatahan tulang pubic rami  
*Pubic rami fractures*
- Kepatahan tulang asetabulum  
*Acetabulum fracture*
  
- Gabungan kepatahan pelvis dan asetabulum  
*Mixed pelvis and acetabulum fracture*
- Kepatahan sakrum  
*Sacral fracture*
- Pemisahan spinopelvis  
*Spinopelvis dissociation*

## Pembedahan Rekonstruksi Anggota / *Limb Reconstructive Surgery*

- Fiksasi kepatahan tulang akut tibia dengan fiksator luaran Ilizarov atau monorail  
*Acute fracture fixation of tibia with Ilizarov external fixator or monorail*
- Fiksasi kepatahan tulang akut femur dengan fiksator luaran Ilizarov atau monorail  
*Acute fracture fixation of femur with Ilizarov external fixator or monorail*
- *Bone transport* untuk tibia atau femur  
*Bone transport for tibia or femur*
- Pemanjangan tulang anggota bawah  
*Bone lengthening of the lower limb*
- Pembetulan sudut (COA) tulang panjang  
*Correction of angulation (COA) of long bones*
- Pembetulan deformiti (COD) tulang panjang  
*Correction of deformity (COD) of long bones*
- Artrodesis sendi  
*Joint arthrodesis*
- Manipulasi sendi  
*Joint manipulation*

## Prosedur Penting / *Essential Procedures*

### Pembedahan Pemanjangan dan Rekonstruksi Anggota (LLRS) / *Limb Lengthening and Reconstruction Surgery (LLRS)*

- Fiksasi kepatahan periartikular menggunakan fiksator luaran Ilizarov/hexapod  
*Periarticular fracture fixation with Ilizarov/hexapod external fixator*
- Artrodesis sendi menggunakan fiksator luaran Ilizarov/hexapod  
*Joint arthrodesis with Ilizarov/hexapod external fixator*
- Pembetulan deformiti angular menggunakan fiksator luaran Ilizarov/hexapod  
*Angular deformities correction with Ilizarov/hexapod external fixator*
- Pembetulan akut deformiti tulang panjang menggunakan fiksasi dalaman  
*Acute correction of deformity of long bone using internal fixation*
- Pemanjangan anggota menggunakan fiksator luaran Ilizarov/hexapod/monorail – termasuk kortikotomi untuk regangan osteogenesis dan pengangkutan tulang  
*Limb Lengthening with Ilizarov/hexapod/monorail external fixator – include corticotomy for distraction osteogenesis and bone transport*
- Fiksasi patah tidak bersambung yang dijangkiti menggunakan fiksator luaran Ilizarov/hexapod/monorail  
*Infected non-union fixation with Ilizarov/hexapod/monorail external fixator*
- Pembetulan kontraktur sendi menggunakan fiksator luaran Ilizarov/hexapod  
*Joint contracture correction with Ilizarov/hexapod external fixator*

## Pelvis / Pelvis

- Fiksator luaran pelvis – iliac crest dan supra asetabulum  
*Pelvis external fixator – iliac crest and supra acetabulum*
- Plat simfisis pubis  
*Symphysis pubis plating*
- Plat kolon anterior  
*Anterior column plating*
- Plat dinding posterior  
*Posterior wall plating*
- Plat kolon posterior  
*Posterior column plating*
- Plat *iliac crest*  
*Iliac crest plating*
- Skru sakroiliak perkutaneus dan skru kolon anterior  
*Percutaneous sacroiliac screw and anterior column screw*

### Rujukan / References:

1. AO surgical reference: <https://surgeryreference.aofoundation.org>
2. Frederick M Azar & S. Terry Canale & James H. Beaty (2020) Campbell's Operative Orthopaedics, 4-Volume Set (14th Edition). Elsevier.
3. Stanley Hoppenfeld, piet deBoer, Richard Buckley (2009), Surgical Exposures in Orthopaedics: The Anatomic Approach (4th Edition). Lippincott Williams & Wilkins 4. Anand J. Thakur (2019), The elements of fracture fixation (4th Edition).

## 2.8 ARTROPLASTI ARTHROPLASTY

Sains Asas / *Basic Sciences*

Biomaterial (Bahan Bio)

- Mekanisme Kegagalan Bahan  
*Mechanism of Material Failure*
- Jenis-Jenis Bahan  
*Types of Material*
- Ciri-Ciri Bahan  
*Material Properties*
  - Logam & Keramik  
*Metal & Ceramic*
  - UHMWPE (Polietilena Berat Molekul Tinggi Ultra)  
*UHMWPE (Ultra High Molecular Weight Polyethylene)*
  - Pengganti Tulang & Alograf  
*Bone Substitute & Allograft*
  - PMMA atau Simen Tulang  
*PMMA or Bone Cement*

Biomekanik / *Biomechanics*

*Biomekanik Pinggul / Hip Biomechanics*

- Pemahaman tentang lengan tuil, otot, dan daya berat badan yang menghasilkan daya reaksi sendi dalam pinggul normal dan tidak normal  
*An understanding of the lever arms, muscles, and body weight forces that produce the joint reaction force in both normal and abnormal hips*
- Pemahaman tentang aplikasi prinsip-prinsip ini dalam artroplasti penggantian  
*An understanding of the application of these principles to replacement arthroplasty*
- Pengetahuan tentang kebolehserasian bio dan ciri-ciri mekanikal bahan yang biasa digunakan dalam artroplasti pinggul total  
*Knowledge of the biocompatibility and mechanical properties of materials in common use in total hip arthroplasty*

*Biomekanik Lutut / Knee Biomechanics*

- Mekanisme Patelo-Femoral  
*The mechanics of the patello-femoral mechanism*
- Paksi Sendi Lutut  
*Axis of Knee Joints*
- Sendi penampung beban bahagian medial dan lateral serta hubung kait antara keduanya  
*The medial and lateral weight-bearing joints and their interrelationship*
- Ligamen krusiat dan kolateral serta sokongan ligamen dan otot yang lain  
*The cruciate and collateral ligaments and other ligamentous and muscular supports*
- Meniskus dan Rawan Artikular  
*Menisci and articular cartilage*

## Aspek Pra-Pembedahan / *Pre-operative Aspect*

### Petunjuk untuk Penggantian Sendi

#### *Indications for Joint Replacement*

- Patologi penyakit yang membawa kepada penggantian sendi sebagai rawatan akhir  
*Pathology of diseases leading to joint replacement as final treatment*

### Perancangan Pembedahan / *Surgical Planning*

- Pemilihan & penilaian pesakit  
*Patient selection & assessment*
- Kaunseling & persetujuan maklum  
*Counselling & consent*
- Templat dan penilaian radiologi  
*Templating & radiological assessment*
- Pemilihan implan (utama, tambahan & semakan semula)  
*Implant selection (primary, adjunct & revision)*
- Profilaksis (pencegahan komplikasi)  
*Prophylaxis*
- Antibiotik  
*Antibiotics*
- Trombosis vena dan embolisme pulmonari (VTE)  
*Venous thromboembolism (VTE)*

### Asepsis dan Prosedur di Bilik Bedah / *Theatre Asepsis & Procedure*

- Kedudukan Pesakit / *Positioning*

### Pendekatan Pembedahan / *Surgical Approaches*

#### Pinggul / *Hip*

- *Posterior*
- *Lateral*
- *Anterolateral*
- *Direct Anterior*

#### Lutut / *Knee*

- Parapatellar Medial  
*Medial Parapatellar*
- Midvastus / Subvastus  
*Midvastus / Subvastus*

- Parapatellar Lateral  
*Lateral Parapatellar*

## Prinsip Penggantian Sendi / *Principles of Joint Replacement*

### Pinggul / *Hip*

- Penempatan Cawan  
*Cup Placement*
- Penempatan Stem  
*Stem Placement*
- Bersimen / Hibrid / Tanpa Simen  
*Cemented / Hybrid / Uncemented*

### Lutut / *Knee*

- Potongan Tulang  
*Bone Cuts*
- Keseimbangan Tisu Lembut  
*Soft Tissue Balancing*
- Konsep Penjajaran  
*Concept of Alignment*
- Keseluruhan / Unikompartmental  
*Total / Unicompartmental*

## Aspek Pasca-Pembedahan / *Post-operative Aspect*

### Komplikasi / *Complications*

- Semasa pembedahan  
*Intraoperative*
- Awal, sederhana & lewat  
*Early, intermediate & late*
- Jangkitan tapak pembedahan  
*Surgical Site Infection*

## Penjagaan Pasca-Pembedahan / *Post-Operative Care*

- Penjagaan luka  
*Wound Care*
- Pemulihan  
*Rehabilitation*

## Keputusan Penggantian Sendi / *Outcome of Joint Replacement*

- Sistem Penilaian  
*Scoring System*
- Skor Lutut Oxford  
*Oxford Knee Score*
- Skor Lutut WOMAC  
*WOMAC Knee Score*
- Skor KOOS  
*KOOS Score*
- Skor Pinggul Harris  
*Harris Hip Score*

## Penilaian dan Pengurusan Artroplasti Gagal / *Assessment and Management of Failed Arthroplasty*

- Jangkitan Prostetik Sendi  
*Prosthetic Joint Infection*
- Fraktur Periprostetik  
*Periprosthetic Fracture*
- Pelonggaran aseptik  
*Aseptic Loosening*

## Topik Lain / *Other Topics*

### Nilai Praktikal dan Pengurusan Konservatif Osteoarthritis / *Practical Value and Conservative Managements of Osteoarthritis*

- Simptomatik *Slow-Acting Drugs for Osteoarthritis (SYSADOAs)*  
*Symptomatic Slow-Acting Drugs for Osteoarthritis (SYSADOAs)*
- Suntikan Intraartikular  
*Intraarticular Injections*

### Osteotomi dalam Pembedahan Rekonstruktif Dewasa / *Osteotomies in Adult Reconstructive Surgery*

- Osteotomi Tibia Tinggi  
*High Tibial Osteotomy*
- Baji Terbuka / Baji Tertutup  
*Open Wedge / Close Wedge*

### Situasi Khas / *Special Situations*

- Keradangan Arthritis  
*Inflammatory Arthritis*
- Arthritis Reumatoid / Arthritis Gout / Arthritis Psoriatik  
*Rheumatoid Arthritis / Gouty Arthritis / Psoriatic Arthritis*
- Manifestasi Dewasa Displasia Hip Kongenital (DDH)  
*Adult Manifestation of Congenital Hip Dysplasia (DDH)*
- Nekrosis Avasular  
*Avascular Necrosis*

### Topik Pilihan / *Optional Topics*

- Navigasi dalam Artroplasti  
*Navigation in Arthroplasty*
- Artroplasti Pinggul & Lutut secara Robotik  
*Robotic Hip & Knee Arthroplasty*
- Tumor Endoprostesis  
*Endoprosthesis Tumor*

### Rujukan / *References:*

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2. W. Norman Scott, David R. Diduch, Richard Iorio, William John Long (2018) *Insall & Scott Surgery of the Knee*. Elsevier.
3. Javad Parvizi, Brian A. Klatt (2013), *Essentials in Total Hip Arthroplasty*.
4. Javad Parvizi, Brian A. Klatt (2011), *Essentials in Total Knee Arthroplasty*.
5. Daniel J. Berry, Mark W. Pagnano (2019), *Illustrated Tips and Tricks in Hip and Knee Reconstructive and Replacement Surgery*. Lippincott Williams & Wilkins.

## **2.9 ONKOLOGI ORTOPEDIK** **ORTHOPAEDIC ONCOLOGY**

Sains Asas - Anatomi, Patologi dan Biologi Tumor  
*Basic Science - Anatomy, Pathology and Biology of Tumours*

Klasifikasi Tumor / *Classification of Tumours*

Tumor Tulang Benigna / *Benign Bone Tumours*

- Tumor Sel Gergasi (GCT)  
*Giant Cell Tumour (GCT)*
- Osteochondroma  
*Osteochondroma*
- Osteblastoma  
*Osteblastoma*
- Osteoid Osteoma  
*Osteoid Osteoma*
  
- Selain Tumor Tulang yang Utama Termasuk Tumor Tulang Sistik  
*Other Primary Bone Tumour Including Cystic Bone Tumour*

Tumor Tisu Lembut Benigna / *Benign Soft Tissue Tumours*

Tumor Tulang Malignan / *Malignant Bone Tumours*

- Osteosarkoma  
*Osteosarcoma*
- Kondrosarkoma  
*Chondrosarcoma*
- Sarkoma Ewing  
*Ewing Sarcoma*
- Selain Tumor Tulang yang Utama  
*Other Primary Bone Tumour*

Tumor Tisu Lembut Malignan / *Malignant Soft Tissue Tumours*

Tumor Neural / *Neural Tumours*

Malignan Hematologi / *Haematological Malignancies*

Lesi / Luka Seperti Tumor / *Tumor-like Lesion*

Peringkat Tumor dan Klasifikasi / *Staging of Tumours and Classification*

Prinsip pengelasan peringkat / *Principles of Staging*

Penyiasatan / *Investigations*

Pengimejan (asas pengimejan, petunjuk, interpretasi, komplikasi, kemajuan dalam penggunaan pengimejan)

*Imaging (basis of imaging, indication, interpretation, complications, advances in use of imaging)*

- Radiograf Am biasa / *General Plain Radiograph*
- Ultrabunyi / *Ultrasound*
- Imbasan Tomografi Berkomputer CT termasuk imej rekonstruksi 3D / *Computed Tomography (CT) Scans including 3D Reconstruction Images*
- Pengimejan Resonans Magnetik / *Magnetic Resonance Imaging (MRI)*
- Imbasan Positron Emission Tomografi (PET) / *Positron Emission Tomography (PET) Scans*
- Densitometri Mineral Tulang / *Bone Mineral Densitometry*
- Perubatan Nuklear - Imbasan tulang, imbasan bertanda / *Nuclear Medicine - Bone Scans, Tagged Scans*

Klasifikasi Tumor / *Tumour Classification*

Interpretasi Histopatologi Asas / *Basic Histopathological Interpretation*

- Margin tumor  
*Tumour margin*
- Kadar nekrosis tumor  
*Tumour necrosis rate*
- Pewarnaan khusus  
*Specific staining*
- Ciri-ciri khusus  
*Specific features*

Prinsip Pengurusan Tumor / *Principles of Tumour Management*

### Prinsip Biopsi / *Principle of Biopsy*

- Jenis-jenis biopsi  
*Types of biopsy*
- Kelebihan dan kekurangan  
*Advantages and disadvantages*
- Teknik biopsi  
*Biopsy Technique*
- Tapak biopsi yang biasa dilakukan  
*Common sites of biopsy*

### Prinsip Margin Pembedahan / *Principle of Surgical Margins*

#### Metastasis / *Metastasis*

- Metastasis sistemik  
*Systemic metastasis*
- Penyakit tulang akibat metastasis  
*Metastasis bone disease*
- Fraktur patologi  
*Pathological fractures*

### Prinsip Rawatan / *Principle of Treatment*

#### Pembedahan dalam Onkologi / *Surgery in Oncology*

#### Penyelamatan Anggota / *Limb Salvage*

- Prinsip penyelamatan anggota  
*Principles of limb salvage*
- Jenis eksisi: intralesional / marginal / luas / radikal  
*Types of excision: intralesional / marginal / wide / radical*

#### Rekonstruksi Anggota / *Limb Reconstruction*

- Rekonstruksi tisu lembut:  
*Soft tissue reconstruction:*
  - Tangga rekonstruksi / flap setempat / flap bebas  
*Reconstruction ladder / local flaps / free flaps*

- Rekonstruksi tulang:  
*Bone reconstruction:*
  - Amputasi / autograf / alograf / autograf terproses / endoprostesis / endoprostesis-alograf / pengangkutan tulang  
*Amputation / autograft / allograft / processed autograft / endoprosthesis / endoprosthesis-allograft / bone transport*

## Kemoterapi dan Radioterapi dalam Ortopedik / *Chemotherapy and Radiotherapy in Orthopaedics*

### Kemoterapi / *Chemotherapy*

- Prinsip kemoterapi  
*Principle of chemotherapy*
- Mod tindakan  
*Mode of action*
- Agen biasa digunakan  
*Common agents*
- Komplikasi yang biasa berlaku  
*Common complications*
- Pengurusan komplikasi  
*Management of complications*

### Radioterapi / *Radiotherapy*

- Prinsip radioterapi  
*Principles of radiotherapy*
- Mod tindakan  
*Mode of action*
- Jenis-jenis radioterapi  
*Types of radiotherapy*
- Komplikasi yang biasa berlaku  
*Common complications*

### Terapi Sokongan Tambahan / *Adjunct Therapy*

### Penjagaan Paliatif dan Pemulihan dalam Onkologi Ortopedik

#### *Palliative Care and Rehabilitation in Orthopaedic Oncology*

- Prinsip penjagaan paliatif  
*Principle of palliative care*
- Asas pemulihan dalam onkologi ortopedik  
*Basis of rehabilitation in Orthopaedic Oncology*
- Kaunseling  
*Counselling*

Rujukan / *References*:

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3. Malawer, Martin M. (2021) Operative Techniques in Orthopaedic Surgical Oncology (3rd Edition). Lippincott Williams & Wilkins
4. Franklin H. Sim MD, Peter F.M. Choong MD, MBBS, Kristy L. Weber MD (2011), Master Techniques in Orthopaedic Surgery: Orthopaedic Oncology and Complex Reconstruction. Wolters Kluwer Health.

### 3. GARIS PANDUAN PEPERIKSAAN GUIDELINES TO EXAMINATIONS

#### 3.1 Peperiksaan Akhir *Exit Examination*

Peperiksaan Akhir / Peperiksaan Doktor Ortopedik & Traumatologi (Dr. Ortho. & Trauma UKM) (Peperiksaan Akhir Jawatankuasa Kepakaran Ortopedik) merupakan penilaian sumatif peringkat kebangsaan yang dijalankan di bawah kelolaan Jawatankuasa Kepakaran Ortopedik. Calon latihan hanya dibenarkan menduduki Peperiksaan Akhir pada akhir tahun ke-4 latihan, iaitu tempoh minimum program tersebut.

*The Exit Examination / Doctor of Orthopaedics & Traumatology Examination (Dr. Ortho. & Trauma UKM) (Orthopaedic Specialty Committee Exit Examination) is a national summative assessment conducted under the auspices of the Orthopaedic Specialty Committee. Trainees are only permitted to sit for the Exit Examination at the end of their 4th year of training, which is the minimum duration of the programme.*

- ❖ Calon daripada Kementerian Kesihatan Malaysia (KKM) mesti menjalani sekurang-kurangnya tiga (3) tahun penempatan rotasi dalam kampus sepanjang program 4 tahun di Fakulti Perubatan, Universiti Kebangsaan Malaysia (UKM).

*Candidates from the Ministry of Health (MOH) must complete a minimum of three (3) years of rotational postings incampus within the 4-year programme at the Faculty of Medicine, Universiti Kebangsaan Malaysia (UKM).*

- ❖ Calon antarabangsa dan swasta mesti menamatkan sepenuhnya tempoh penempatan rotasi selama empat (4) tahun dalam program 4 tahun di Fakulti Perubatan, Universiti Kebangsaan Malaysia (UKM). Walau bagaimanapun, mereka boleh memohon untuk menjalani penempatan elektif selama satu tahun di luar institusi, tertakluk kepada kelulusan Ketua Jabatan / Timbalan Dekan (Siswazah) / Dekan.

*International and private candidates must complete the full four (4) years of rotational postings within the 4-year programme at the Faculty of Medicine, Universiti Kebangsaan Malaysia (UKM). However, they may apply to undertake a one-year elective posting outside the institution, subject to approval Head of Department / Deputy Dean (Graduate) / Dean.*

- ❖ Ia diadakan setiap enam (6) bulan sekali.

*It is held every six (6) months.*

Calon mesti mendaftar untuk peperiksaan, membayar semua yuran yang diperlukan, dan memenuhi semua kriteria yang ditetapkan oleh Jabatan serta Universiti, termasuk Laporan Penyelia, Penilaian Kemahiran Pembedahan, Buku Log, Buku Kes, dan Disertasi/ Manuskrip dalam format pra-penerbitan.

*Candidates must register for the examination, pay all required fees, and fulfill all criteria set by the Department and the University, including the Supervisor's Report, Surgical Skill Assessment, Log Book, Case Book, and Dissertation/ Manuscript in a pre-publication format.*

Calon yang gagal mematuhi syarat-syarat ini mungkin akan disekat daripada menduduki peperiksaan dan penolakan ini akan dikira sebagai satu percubaan.

*Candidates who fail to comply with these requirements may be barred from sitting for the examination, and such forfeiture will count as one attempt.*

Calon dibenarkan mengulang peperiksaan yang gagal sehingga tiga (3) kali; percubaan seterusnya memerlukan rayuan rasmi (hanya sekali) dimohon bagi semester hadapan, yang hanya akan dipertimbangkan jika terdapat bukti peningkatan prestasi, dan dalam tempoh maksimum tujuh (7) tahun latihan

*Candidates may attempt a failed examination up to three (3) times; further attempts require a formal appeal (once only) applied for next semester, which shall only be considered if there is evidence of improved performance, and within the maximum period of seven (7) years of training.*

## 3.2 Struktur dan Format Peperiksaan *Examination Structure and Format*

Peperiksaan Akhir terdiri daripada **3 Bahagian**:  
*The Exit Examination consists of 3 Sections:*

### **Seksyen I – Teori** **Section I – Theory**

- i. **Esei Panjang Berstruktur** : Soalan berbentuk terbuka berdasarkan satu senario klinikal.  
*Long Guided Essays (LGE)* Calon dibimbing melalui senario tersebut dan perlu memberikan jawapan mereka biasanya tanpa had panjang atau bilangan perkataan.  
*These are open-ended questions based on a clinical scenario. The trainee is guided through the scenario and has to provide their answer usually without any limit on the length or number of words.*
  
- ii. **Nota Ringkas** : Soalan boleh berbentuk terbuka atau *vignette* klinikal.  
*Short Notes (SN)* Calon perlu menyediakan jawapan ringkas mereka sendiri.  
*The questions may be open-ended or clinical vignettes. Trainees construct their own concise answer.*
  
- iii. **Soalan-Jawapan Tunggal Terbaik** : Calon dikehendaki memilih satu jawapan daripada  
*Single Best Answer Questions (SBAQ)* beberapa pilihan yang disediakan.  
SBAQ memerlukan calon memilih satu jawapan yang betul daripada beberapa pilihan jawapan yang diberikan.  
*The trainee is required to select an answer from a number of choices that are provided. The BAQ requires trainees to select a single correct response out of a series of responses.*

### **Bahagian II – Viva dan Pemeriksaan Klinikal Objektif Berstruktur (OSCE)** **Section II – Viva and Objective Structured Clinical Examination (OSCE)**

#### **a. Komponen Viva Voce:** *Viva Voce component:*

- Prinsip Ortopedik** : Peperiksaan lisan di mana calon akan diajukan soalan mengenai prinsip amalan ortopedik oleh tiga pemeriksa dalam tempoh 30 minit.  
*Principles of Orthopaedics* *This is an oral examination where the trainee is questioned on the principles of orthopaedic practice by three examiners over a period of 30 minutes.*

**Ortopedik Operatif** : Peperiksaan lisan di mana calon akan diajukan soalan  
*Operative Orthopaedics* prinsip amalan ortopedik oleh tiga pemeriksa dalam tempoh 30 minit.  
*This is an oral examination where the trainee is questioned on the Operative Orthopaedics practice by three examiners over a period of 30 minutes.*

**b. Pemeriksaan Klinikal Objektif Berstruktur (OSCE)**

*Objective Structured Clinical Examination (OSCE)*

Satu susunan yang terdiri daripada 20 stesen interaktif dan tidak interaktif. Setiap stesen mengandungi tugas khusus, sama ada melibatkan pelaksanaan kemahiran klinikal dalam persekitaran simulasi atau menjawab soalan berkaitan amalan ortopedik.

*A sequence consisting of 20 interactive and non-interactive stations. Each station presents a specific task, which may involve performing a clinical skill in a simulated environment or answering questions related to orthopaedic practice.*

**Seksyen III – Klinikal**

**Section III – Clinicals**

- i. **Kes Panjang** : Seorang pesakit dipilih dari wad atau klinik pesakit luar.  
*Long Case (LC)* Calon diberikan masa 15 minit untuk menemubual pesakit dan melakukan pemeriksaan fizikal yang dipantau oleh tiga pemeriksa. Calon kemudian diberi masa tambahan 15 minit untuk membentangkan penemuan mereka kepada pemeriksa dan menjawab sebarang soalan berkaitan penemuan, diagnosis pembezaan, siasatan, serta pengurusan selanjutnya keadaan pesakit. Calon mesti melalui dua kes panjang  
*A patient is selected from the ward or the outpatient clinic. The trainee is given 15 minutes to interview the patient and perform a physical examination observed by the three examiners. The trainee then has a further 15 minutes to present their findings to the examiners and answers any questions about the findings, differential diagnosis, investigations, and the further management of the patient's condition. The trainee must be taken through two LCs.*
- ii. **Kes Pendek** : Seorang pesakit dipilih dari wad atau klinik pesakit luar.  
*Short Case (SC)* Calon diberikan masa 10 minit untuk melakukan pemeriksaan fizikal dan menjawab soalan daripada pemeriksa mengenai penemuan tersebut, diikuti dengan perbincangan tentang diagnosis pembezaan, siasatan, dan pengurusan selanjutnya keadaan pesakit. Calon mesti melalui tiga kes pendek.  
*A patient is selected from the ward or the outpatient clinic. The trainee is given 10 minutes to perform a physical examination and answer any questions from the examiners about the findings followed by a discussion on the differential diagnosis, investigations, and the further management of the patient's condition. The trainee must be taken through three SCs.*

Calon **WAJIB LULUS SEMUA** TIGA (3) Bahagian untuk lulus peperiksaan.  
*Candidates MUST PASS ALL THREE (3) Sections to pass the examination.*

| <b>SEKSYEN</b><br><b>SECTION</b><br><b>I</b><br><i>I</i><br><b>(TEORI)</b><br><i>(THEORY)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>SEKSYEN</b><br><b>SECTION</b><br><b>II</b><br><i>II</i><br><b>(VIVA &amp; OSCE)</b><br><i>(VIVA &amp; OSCE)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>SEKSYEN</b><br><b>SECTION</b><br><b>III</b><br><i>III</i><br><b>(KLINIKAL)</b><br><i>(CLINICALS)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>3. <b>ESEI I</b><br/> <i>ESSAY I</i><br/>                     - 3 Esei Panjang + 3 Nota Ringkas<br/> <i>3 long essays + 3 short notes</i><br/>                     - 2 Jam<br/> <i>2 Hrs</i><br/>                     - 100 markah (50%)<br/> <i>100 marks (50%)</i></p> <p>4. <b>ESEI II</b><br/> <i>PAPER II</i><br/>                     - 3 Esei Panjang + 3 Nota Ringkas<br/> <i>3 long essays + 3 short</i><br/>                     - 2 Jam<br/> <i>2 hrs</i><br/>                     - 100 markah (50%)<br/> <i>100 marks (50%)</i></p> <p>4. <b>MCQs</b><br/>                     - 100 soalan (Soalan-Jawapan Tunggal)<br/> <i>100 questions (single-answer type)</i><br/>                     - 3 Jam<br/> <i>3 hrs</i><br/>                     - 100 markah<br/> <i>100 marks</i></p> | <p>1. <b>VIVA I</b><br/> <i>VIVA I</i><br/>                     - Prinsip Pembedahan Ortopedik<br/> <i>Principles of Orthopaedic Surgery</i><br/>                     - 30 min<br/> <i>30 min</i><br/>                     - 100 markah<br/> <i>100 marks</i></p> <p>2. <b>VIVA II</b><br/> <i>VIVA II</i><br/>                     - Ortopedik Operatif<br/> <i>Operative Orthopaedics</i><br/>                     - 30 min<br/> <i>30 min</i><br/>                     - 100 markah<br/> <i>100 marks</i></p> <p>4. <b>OSCE (VIVA III) *</b><br/> <i>OSCE (VIVA III) *</i><br/>                     - 20 soalan<br/> <i>20 questions</i><br/>                     - 3 jam<br/> <i>3 hrs</i><br/>                     - 200 markah (50%)<br/> <i>200 marks (50%)</i></p> | <p>3. <b>KES PANJANG</b><br/> <i>LONG CASES</i><br/>                     - 2 pesakit setiap calon<br/> <i>2 patient per candidate</i><br/>                     - 30 minit pemeriksaan dan soal jawab untuk pesakit pertama<br/> <i>30 minutes clerking examination and Q &amp; A for first patient</i><br/>                     - 30 minit pemeriksaan dan soal jawab untuk pesakit kedua<br/> <i>30 minutes clerking examination and Q &amp; A for second patient</i><br/>                     - 100 markah<br/> <i>100 marks</i></p> <p>4. <b>KES PENDEK</b><br/> <i>SHORT CASES</i><br/>                     - 3 pesakit setiap calon<br/> <i>3 patients per candidate</i><br/>                     - 10 minit setiap pesakit<br/> <i>10 min each patient</i><br/>                     (JUMLAH 30 min)<br/> <i>(TOTAL 30 min)</i><br/>                     - 100 markah<br/> <i>100 marks</i></p> |
| <p><b>JUMLAH 200 markah</b><br/> <i>TOTAL 200 marks</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p><b>JUMLAH 300 markah</b><br/> <i>TOTAL 300 marks</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p><b>JUMLAH 200 markah</b><br/> <i>TOTAL 200 marks</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><b>MARKAH LULUS 100/200</b><br/> <i>PASS MARK 100/200</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>MARKAH LULUS 150/300</b><br/> <i>PASS MARK 150/300</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p><b>MARKAH LULUS 100/200</b><br/> <i>PASS MARK 100/200</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**\*\* Keperluan Khas untuk Peperiksaan Klinikal:**

**\*\* Special requirement for the Clinical Examination:**

**Jika calon memperoleh markah 40% atau kurang sama ada dalam VIVA atau OSCE atau Kes Panjang atau Kes Pendek, calon tersebut akan gagal keseluruhan peperiksaan (gagal tidak boleh ditebus).**

*If a candidate scores 40% or less in either VIVA or OSCE or the Long Case or Short Case, they will fail the entire examination (unredeemable fail).*

**Hanya calon yang lulus Seksyen Teori dibenarkan meneruskan ke peperiksaan Klinikal dan Viva Voce.**

*Only candidates who pass the Theory Section are permitted to proceed to the Clinical and Viva Voce examinations.*

**Disusun oleh:**

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**Lampiran I: Senarai Semak Portfolio Pelatih**  
*Attachment I: Trainee Portfolio Checklist*



**TRAINEE PORTFOLIO CHECKLIST**

| No | Document                                           | Requirement                    | Rotations |          |          |     |        |     |      |      |       |       |        |  |
|----|----------------------------------------------------|--------------------------------|-----------|----------|----------|-----|--------|-----|------|------|-------|-------|--------|--|
|    |                                                    |                                | Trauma 1  | Trauma 2 | Trauma 3 | AMT | Arthro | F&A | Hand | Onco | Paeds | Spine | Sports |  |
| 1  | Learning Agreement with Supervisor                 | 1 per year                     |           |          |          |     |        |     |      |      |       |       |        |  |
| 2  | Learning Agreement with Trainer & Trainer's Report | 1 per rotation                 |           |          |          |     |        |     |      |      |       |       |        |  |
| 3  | Rotation Assessment Summary                        | 1 per rotation                 |           |          |          |     |        |     |      |      |       |       |        |  |
| 4  | PBA                                                | 3 per rotation                 |           |          |          |     |        |     |      |      |       |       |        |  |
| 5  | Mini-CEX                                           | 7 per rotation                 |           |          |          |     |        |     |      |      |       |       |        |  |
| 6  | CbD                                                | 2 per rotation                 |           |          |          |     |        |     |      |      |       |       |        |  |
| 7  | Supervisor's Report                                | 1 per rotation                 |           |          |          |     |        |     |      |      |       |       |        |  |
| 8  | SCOT End of Year Assessment Form                   | 1 at end of each academic year |           |          |          |     |        |     |      |      |       |       |        |  |

**Grade**

**Satisfactory (S):** Fulfilled minimal requirement with ALL satisfactory grading number or grading.)

or **Unsatisfactory (U):** Did not fulfil minimal requirements (either



**ROTATION ASSESSMENT SUMMARY**

**A summary sheet of the assessments during each rotation must accompany the Trainee Portfolio.**

Trainee Name: \_\_\_\_\_

Rotation: \_\_\_\_\_

Duration: \_\_\_\_\_

Trainer(s): \_\_\_\_\_

| No | Document                                           | Requirement                            | Achieved |
|----|----------------------------------------------------|----------------------------------------|----------|
| 1  | PBA                                                | 3 per rotation                         |          |
| 2  | Mini-CEX                                           | 7 per rotation                         |          |
| 3  | CbD                                                | 2 per rotation                         |          |
| 4  | Logbook                                            | satisfactory number of cases performed |          |
| 5  | RAQI                                               | Achieved milestones                    |          |
| 6  | Clinical Reports                                   | 1 per rotation                         |          |
| 7  | Attendance at CPD events                           |                                        |          |
| 8  | Essential workshops/ courses                       |                                        |          |
| 9  | Learning Agreement with Trainer & Trainer's Report | 1 per rotation                         |          |
| 10 | Supervisor's Report                                | 1 per rotation                         |          |

\* For no.7: Record number of CPD points obtained





**Lampiran IV: Perjanjian Pembelajaran dengan Penyelia**  
*Attachment IV: Learning Agreement with Supervisor*



**LEARNING AGREEMENT WITH SUPERVISOR**

|                 |                                                |                             |
|-----------------|------------------------------------------------|-----------------------------|
| <b>Trainee:</b> | <b>Year of Training: 1 / 2 / 3 / 4 / Other</b> | <b>Venue:</b>               |
| <b>MMC No:</b>  | <b>Supervisor:</b>                             | <b>Duration of meeting:</b> |
| <b>Date:</b>    | <b>Co-Supervisor(s):</b>                       |                             |

| <b>LEARNING AGREEMENT</b>                                                                           |                 |                         |
|-----------------------------------------------------------------------------------------------------|-----------------|-------------------------|
| <b>Research, Audit and Quality Improvement (RAQI) Related Assessments</b>                           |                 | <b>Other comments:</b>  |
| <b>Assessment Tools</b><br>i. PBA (min 3 per procedure)<br>ii. Mini-CEX (min 7)<br>iii. CBD (min 2) |                 |                         |
| <b>Planned absences, conferences etc</b>                                                            |                 |                         |
| <b>Dates for future meetings</b>                                                                    |                 |                         |
| <b>Supervisor:</b>                                                                                  | <b>Trainee:</b> | <b>Date: DD/MM/YYYY</b> |
| <b>Co-supervisor(s):</b>                                                                            |                 |                         |

**Lampiran V: Laporan Penyelia (m/s 1)**  
*Attachment V: Supervisor's Report (pg.1)*



**SUPERVISOR'S REPORT**

|                 |                                                |                             |
|-----------------|------------------------------------------------|-----------------------------|
| <b>Trainee:</b> | <b>Year of Training: 1 / 2 / 3 / 4 / Other</b> | <b>Meeting No.:</b>         |
| <b>MMC No:</b>  | <b>Supervisor:</b>                             | <b>Venue:</b>               |
| <b>Date:</b>    | <b>Co-Supervisor(s):</b>                       | <b>Duration of meeting:</b> |

*On a scale of 1 to 5, where 1 is very poor and 5 is excellent, how would you rate the progress of the trainee since the last meeting?  
 If appropriate, add comments below.*

| <b>REVIEW</b>                                                                               | <b>Supervisor</b> | <b>Trainee</b> |
|---------------------------------------------------------------------------------------------|-------------------|----------------|
| <b>Review Trainer's Report, Clinical Duties &amp; Logbook</b>                               |                   |                |
| <b>Review Clinical Report(s)</b>                                                            |                   |                |
| <b>Review Progress of Research, Audit and Quality Improvement (RAQI) Related Assessment</b> |                   |                |
| <i>Achievements since last meeting and other comments</i>                                   |                   |                |
| <i>Discussion for this meeting</i>                                                          |                   |                |

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**Lampiran V: Laporan Penyelia (m/s 2)**  
*Attachment V: Supervisor's Report (pg.2)*



| SUMMARY                                                                                 |            |                |         |                         |
|-----------------------------------------------------------------------------------------|------------|----------------|---------|-------------------------|
|                                                                                         | Supervisor |                | Trainee |                         |
|                                                                                         | YES        | NO             | YES     | NO                      |
| Are the supervisor and trainee clear about current objectives?                          |            |                |         |                         |
| Are the supervisor and trainee clear about the work to be done before the next meeting? |            |                |         |                         |
| Have any specific problems associated with the work or the supervision been identified? |            |                |         |                         |
| <b>Goals for next meeting and other comments</b>                                        |            |                |         |                         |
|                                                                                         |            |                |         |                         |
| <b>Date of next meeting:</b>                                                            |            |                |         |                         |
|                                                                                         |            |                |         |                         |
| <b>Supervisor(s)</b>                                                                    |            | <b>Trainee</b> |         | <b>Date: DD/MM/YYYY</b> |
|                                                                                         |            |                |         |                         |

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**Lampiran VI: Perjanjian Pembelajaran dengan Pengajar & Laporan Pengajar (m/s 1)**  
*Attachment VI: Learning Agreement with Trainer & Trainer's Report (pg.1)*



**LEARNING AGREEMENT WITH TRAINER & TRAINER'S REPORT**

|                 |                                                |                   |
|-----------------|------------------------------------------------|-------------------|
| <b>Trainee:</b> | <b>Year of Training: 1 / 2 / 3 / 4 / Other</b> | <b>Rotation:</b>  |
| <b>MMC No:</b>  | <b>Trainer 1:</b>                              | <b>Start date</b> |
| <b>Date:</b>    | <b>Trainer 2:</b>                              | <b>End date</b>   |

| LEARNING AGREEMENT                                                                                                                                                                                                                                                                                                                                     |                              |                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------|
| <b>Review timetable</b> (no. clinics, OT per week) & on-call rota<br><b>Assessment Tools</b><br>i. PBA (min 3 per procedure)<br>ii. Mini-CEX (min 7)<br>iii. Cbd (min 2)<br><b>Clinical Report</b><br><b>Planned absences, conferences etc</b> (Trainer & Trainee)<br><b>Dates for future meetings</b><br>i. Mid-term review(s)<br>ii. End of rotation | <b>Other comments:</b>       |                              |
| <b>Trainer(s):</b>                                                                                                                                                                                                                                                                                                                                     | <b>Trainee:</b>              | <b>Date: DD/MM/YYYY</b>      |
| <b>REVIEW</b>                                                                                                                                                                                                                                                                                                                                          | <b>Meeting 2: DD/MM/YYYY</b> | <b>Meeting 3: DD/MM/YYYY</b> |
| <b>Review timetable</b><br><b>Assessment Tools</b><br>i. PBA (min 3 per procedure)<br>ii. Mini-CEX (min 7)<br>iii. Cbd (min 2)<br><b>Clinical Report &amp; Logbook</b><br><b>Planned absences / Future meetings / Signatures</b>                                                                                                                       |                              |                              |

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**Lampiran VI: Perjanjian Pembelajaran dengan Pengajar & Laporan Pengajar (m/s 2)**  
*Attachment VI: Learning Agreement with Trainer & Trainer's Report (pg.2)*



| <b>END OF ROTATION REVIEW</b>                                                                                                                                                                    |                                                                                                                                                                                  |                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Educational Objectives and Assessments</b>                                                                                                                                                    | <i>On a scale of 1 to 5, where 1 is very poor and 5 is excellent, how would you rate the progress of the trainee since the last meeting? If appropriate, add comments below.</i> |                  |
|                                                                                                                                                                                                  | <b>Trainer</b>                                                                                                                                                                   | <b>Trainee</b>   |
| Applied Clinical Knowledge                                                                                                                                                                       |                                                                                                                                                                                  |                  |
| Applied Clinical Skills                                                                                                                                                                          |                                                                                                                                                                                  |                  |
| Surgical Logbook                                                                                                                                                                                 |                                                                                                                                                                                  |                  |
| Professional Behaviours                                                                                                                                                                          |                                                                                                                                                                                  |                  |
| Clinical Report                                                                                                                                                                                  |                                                                                                                                                                                  |                  |
| Assessments (PBA / mini-CEX / CBD)<br>i. Identified & Reviewed?<br>ii. Completed (whole or in part?)                                                                                             |                                                                                                                                                                                  |                  |
| <b>SUMMARY</b>                                                                                                                                                                                   | Have the targets within the Learning Agreement been achieved? <i>(please specify any actions or recommendations for future rotations)</i>                                        |                  |
| <b>Trainee End of Rotation Reflections</b>                                                                                                                                                       |                                                                                                                                                                                  |                  |
| Significant experience in addition to routine training (courses, meetings etc)<br>Reflections and Conclusions on total rotation experiences<br>Plans, targets & personal goals for next rotation |                                                                                                                                                                                  |                  |
| Trainer(s)                                                                                                                                                                                       | Trainee                                                                                                                                                                          | Date: DD/MM/YYYY |

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**Lampiran VII: Penilaian Latihan Klinik Mini (Mini-CEX) (m/s 1)**  
**Attachment VII: Mini Clinical Evaluation Exercise (Mini-CEX) (pg.1)**

X



**MINI-CLINICAL EXAMINATION (MINI-CEX)**

|                                                                                                                                     |                                                                                                     |                                                                                                                      |                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Trainee Name                                                                                                                        |                                                                                                     | MMC No.:                                                                                                             |                                                                            |
|                                                                                                                                     |                                                                                                     | Rotation:                                                                                                            |                                                                            |
| Focus of discussion                                                                                                                 |                                                                                                     | Date:                                                                                                                |                                                                            |
|                                                                                                                                     |                                                                                                     |                                                                                                                      |                                                                            |
| Complexity                                                                                                                          | <b>Difficult</b><br>Multiple problems, difficult to diagnose/recognise                              | <b>Moderate</b><br>Common conditions with uncommon presentation OR uncommon condition but easy to diagnose/recognise | <b>Easy</b><br>Common conditions and straightforward to diagnose/recognise |
| <b>FEEDBACK</b>                                                                                                                     |                                                                                                     |                                                                                                                      |                                                                            |
| <b>General</b>                                                                                                                      |                                                                                                     |                                                                                                                      |                                                                            |
|                                                                                                                                     |                                                                                                     |                                                                                                                      |                                                                            |
| <b>Particular strengths</b><br><i>What trainee did well on</i>                                                                      |                                                                                                     |                                                                                                                      |                                                                            |
|                                                                                                                                     |                                                                                                     |                                                                                                                      |                                                                            |
| <b>Suggestions for development</b><br><i>What trainee can do better</i>                                                             |                                                                                                     |                                                                                                                      |                                                                            |
|                                                                                                                                     |                                                                                                     |                                                                                                                      |                                                                            |
| <b>Recommended actions</b>                                                                                                          |                                                                                                     |                                                                                                                      |                                                                            |
|                                                                                                                                     |                                                                                                     |                                                                                                                      |                                                                            |
| <b>How do you rate this trainee in:</b>                                                                                             |                                                                                                     | <b>Trainee's Comments</b>                                                                                            |                                                                            |
| N: Not observed or not appropriate<br>U: Unsatisfactory<br>S: Satisfactory standard for CCT (no prompting or intervention required) |                                                                                                     |                                                                                                                      |                                                                            |
| History Taking                                                                                                                      |                                                                                                     |                                                                                                                      |                                                                            |
| Physical Examination                                                                                                                |                                                                                                     |                                                                                                                      |                                                                            |
| Diagnosis & Clinical Judgement                                                                                                      |                                                                                                     |                                                                                                                      |                                                                            |
| Management and follow-up planning                                                                                                   |                                                                                                     |                                                                                                                      |                                                                            |
| Communication/Counselling                                                                                                           |                                                                                                     |                                                                                                                      |                                                                            |
| Professionalism                                                                                                                     |                                                                                                     |                                                                                                                      |                                                                            |
| Organisation/Efficiency                                                                                                             |                                                                                                     |                                                                                                                      |                                                                            |
| <b>OVERALL CLINICAL COMPETENCE</b>                                                                                                  |                                                                                                     |                                                                                                                      |                                                                            |
| <b>GLOBAL SUMMARY</b><br>Level at which completed elements of the mini-CEX were performed                                           |                                                                                                     |                                                                                                                      |                                                                            |
| <b>LEVEL 0</b>                                                                                                                      | Insufficient evidence observed to support a judgement                                               |                                                                                                                      |                                                                            |
| <b>LEVEL 1</b>                                                                                                                      | Unable to manage the case under supervision                                                         |                                                                                                                      |                                                                            |
| <b>LEVEL 2</b>                                                                                                                      | Able to manage the case under supervision                                                           |                                                                                                                      |                                                                            |
| <b>LEVEL 3</b>                                                                                                                      | Able to manage the case with minimum supervision (would need occasional help)                       |                                                                                                                      |                                                                            |
| <b>LEVEL 4</b>                                                                                                                      | Competent to manage the case with distant supervision (could deal with complications if they arose) |                                                                                                                      |                                                                            |
| <b>Signature and stamp of:</b>                                                                                                      |                                                                                                     |                                                                                                                      |                                                                            |
| <i>Assessor</i>                                                                                                                     |                                                                                                     | <i>Trainee</i>                                                                                                       |                                                                            |

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| Activity/Behaviour                | Description                                                                                                                                                                       |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| History Taking                    | Facilitates patient's telling of story; effectively uses appropriate questions to obtain accurate, adequate information; responds appropriately to verbal and non-verbal cues.    |
| Physical Examination              | Follow efficient, logical sequence; examination appropriate to clinical problem; explains to patient; sensitive to patient's comfort, modesty.                                    |
| Diagnosis & Clinical Judgement    | Makes appropriate diagnosis and suggests appropriate diagnostic studies, considers risks and benefits.                                                                            |
| Management and follow-up planning | Surgical/Non-surgical                                                                                                                                                             |
| Communication/Counselling         | Explores patient's perspective; jargon-free, open and honest, empathic                                                                                                            |
| Professionalism                   | Shows respect, compassion, empathy, establishes trust. Attends to patient's needs of comfort, respect, confidentiality. Behaves in an ethical manner. Aware of their limitations. |
| Organisation/Efficiency           | Prioritise, is timely, succinct. Summarises                                                                                                                                       |

**Lampiran VIII: Perbincangan Berdasarkan Kes (CbD) (m/s 1)**  
**Attachment VIII: Case-based Discussion (CbD) (pg.1)**



**CASE-BASED DISCUSSION (CbD)**

|                                                                          |                                                                        |      |                                                                                                                      |                    |                                                                            |
|--------------------------------------------------------------------------|------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------|
| Trainee Name                                                             |                                                                        |      |                                                                                                                      |                    | MMC No.:                                                                   |
|                                                                          |                                                                        |      |                                                                                                                      |                    | Rotation:                                                                  |
| Focus of discussion                                                      |                                                                        |      |                                                                                                                      |                    | Date:                                                                      |
| Complexity                                                               | <b>Difficult</b><br>Multiple problems, difficult to diagnose/recognise |      | <b>Moderate</b><br>Common conditions with uncommon presentation OR uncommon condition but easy to diagnose/recognise |                    | <b>Easy</b><br>Common conditions and straightforward to diagnose/recognise |
| Clinical Setting                                                         | Clinic                                                                 | Ward | Emergency                                                                                                            | OT                 | Other:                                                                     |
| Simulated Setting?                                                       | Y Description of scenario                                              |      |                                                                                                                      |                    |                                                                            |
| <b>FEEDBACK</b>                                                          |                                                                        |      |                                                                                                                      |                    |                                                                            |
| General                                                                  |                                                                        |      |                                                                                                                      |                    |                                                                            |
| Particular strengths<br><i>What trainee did well on</i>                  |                                                                        |      |                                                                                                                      |                    |                                                                            |
| Suggestions for development<br><i>What trainee can do better</i>         |                                                                        |      |                                                                                                                      |                    |                                                                            |
| Recommended actions                                                      |                                                                        |      |                                                                                                                      |                    |                                                                            |
| How do you rate this trainee in:                                         |                                                                        |      |                                                                                                                      | Trainee's Comments |                                                                            |
| N: Not observed or not appropriate                                       |                                                                        |      |                                                                                                                      |                    |                                                                            |
| U: Unsatisfactory                                                        |                                                                        |      |                                                                                                                      |                    |                                                                            |
| S: Satisfactory standard for CCT (no prompting or intervention required) |                                                                        |      |                                                                                                                      |                    |                                                                            |
| Medical record keeping                                                   |                                                                        |      |                                                                                                                      |                    |                                                                            |
| Clinical assessment                                                      |                                                                        |      |                                                                                                                      |                    |                                                                            |
| Diagnostic skills and underlying knowledge base                          |                                                                        |      |                                                                                                                      |                    |                                                                            |
| Management and follow-up planning                                        |                                                                        |      |                                                                                                                      |                    |                                                                            |
| Clinical judgement and decision making                                   |                                                                        |      |                                                                                                                      |                    |                                                                            |
| Communication and team working skills                                    |                                                                        |      |                                                                                                                      |                    |                                                                            |
| Leadership skills                                                        |                                                                        |      |                                                                                                                      |                    |                                                                            |
| Professionalism                                                          |                                                                        |      |                                                                                                                      |                    |                                                                            |



| <b>GLOBAL SUMMARY</b>                                       |                                                                                                     |                |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------|
| Level at which completed elements of the CbD were performed |                                                                                                     |                |
| <b>LEVEL 0</b>                                              | Insufficient evidence observed to support a judgement                                               |                |
| <b>LEVEL 1</b>                                              | Unable to manage the case under supervision                                                         |                |
| <b>LEVEL 2</b>                                              | Able to manage the case under supervision                                                           |                |
| <b>LEVEL 3</b>                                              | Able to manage the case with minimum supervision (would need occasional help)                       |                |
| <b>LEVEL 4</b>                                              | Competent to manage the case with distant supervision (could deal with complications if they arose) |                |
| <b>Signature and stamp of:</b><br><i>Assessor</i>           |                                                                                                     | <i>Trainee</i> |

**Lampiran IX: Penilaian Berasaskan Prosedur (PBA) (m/s 1)**  
**Attachment IX: Procedure Based Assessment (PBA) (pg.1)**



| PROCEDURE-BASED ASSESSMENT (PBA)                                     |           |           |
|----------------------------------------------------------------------|-----------|-----------|
| Trainee:                                                             | Assessor: | Date:     |
| Start time:                                                          | End time: | Duration: |
| Operation more difficult than usual? Yes / No (If yes, state reason) |           |           |
| Subspecialty (tick which applies, if any)                            |           |           |
| Procedure                                                            |           |           |

**IMPORTANT:** The trainee should explain what he/she intends to do throughout the procedure. The Assessor should provide verbal prompts if required, and intervene if patient safety is at risk.

**Rating:**

**N** = Not observed or not appropriate

**U** = Unsatisfactory

**S** = Satisfactory standard for CCT (no prompting or intervention required)

| Competencies and Definitions          |                                                                                                                                                                                                          | Rating<br>N/U/S | Comments |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------|
| <b>I. Consent</b>                     |                                                                                                                                                                                                          |                 |          |
| C1                                    | Demonstrates sound knowledge of indications and contraindications including alternatives to surgery                                                                                                      |                 |          |
| C2                                    | Demonstrates awareness of sequelae of operative or non-operative management                                                                                                                              |                 |          |
| C3                                    | Demonstrates sound knowledge of complications of surgery                                                                                                                                                 |                 |          |
| C4                                    | Explains the procedure to the patient and/or relatives or carers and checks understanding                                                                                                                |                 |          |
| C5                                    | Explains likely outcome and time to recovery and checks understanding                                                                                                                                    |                 |          |
| <b>II. Pre operation planning</b>     |                                                                                                                                                                                                          |                 |          |
| PL1                                   | Demonstrates recognition of anatomical and pathological abnormalities (and relevant co-morbidities) and selects appropriate operative strategies / techniques to deal with these e.g. nutritional status |                 |          |
| PL2                                   | Demonstrates ability to make reasoned choice of appropriate equipment and other materials taking into account appropriate investigations e.g. x-rays                                                     |                 |          |
| PL3                                   | Checks materials, equipment and device requirements with operating room staff                                                                                                                            |                 |          |
| PL4                                   | Ensures the correct operation site is marked where applicable                                                                                                                                            |                 |          |
| PL5                                   | Checks patient records, personally reviews investigations                                                                                                                                                |                 |          |
| <b>III. Pre operative preparation</b> |                                                                                                                                                                                                          |                 |          |
| PR1                                   | Checks in theatre that consent has been obtained                                                                                                                                                         |                 |          |
| PR2                                   | Gives effective briefing to team, performs a Time-Out                                                                                                                                                    |                 |          |
| PR3                                   | Ensures proper and safe positioning of the patient on the operating table                                                                                                                                |                 |          |
| PR4                                   | Demonstrates careful skin preparation                                                                                                                                                                    |                 |          |
| PR5                                   | Demonstrates careful draping of the patient's operative field                                                                                                                                            |                 |          |
| PR6                                   | Ensures general equipment and materials are deployed safely (e.g. tourniquet, diathermy)                                                                                                                 |                 |          |
| PR7                                   | Ensures appropriate antibiotics/drugs administered                                                                                                                                                       |                 |          |
| PR8                                   | Arranges for and deploys specialist supporting equipment (e.g. image intensifiers) effectively                                                                                                           |                 |          |
| <b>IV. Exposure and closure</b>       |                                                                                                                                                                                                          |                 |          |
| E1                                    | Demonstrates knowledge of optimum skin incision / portal / access                                                                                                                                        |                 |          |
| E2                                    | Achieves an adequate exposure through purposeful dissection in correct tissue planes and identifies all structures correctly                                                                             |                 |          |

**Lampiran IX: Penilaian Berasaskan Prosedur (PBA) (m/s 2)**  
**Attachment IX: Procedure Based Assessment (PBA) (pg.2)**



|                                                                             |                                                                                                                                              |  |  |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| E3                                                                          | Completes a sound wound closure where appropriate                                                                                            |  |  |
| E4                                                                          | Protects the wound with dressings, splints and drains where appropriate                                                                      |  |  |
| <b>V. Intra operative technique: global (G) and task-specific items (T)</b> |                                                                                                                                              |  |  |
| IT1(G)                                                                      | Follows an agreed, logical sequence or protocol for the procedure                                                                            |  |  |
| IT2(G)                                                                      | Consistently handles tissue well with minimal damage                                                                                         |  |  |
| IT3(G)                                                                      | Controls bleeding promptly by an appropriate method                                                                                          |  |  |
| IT4(G)                                                                      | Demonstrates a sound technique of knots and sutures/staples                                                                                  |  |  |
| IT5(G)                                                                      | Uses instruments appropriately and safely                                                                                                    |  |  |
| IT6(G)                                                                      | Proceeds at appropriate pace with economy of movement                                                                                        |  |  |
| IT7(G)                                                                      | Anticipates and responds appropriately to variation e.g. anatomy                                                                             |  |  |
| IT8(G)                                                                      | Deals calmly and effectively with unexpected events/complications                                                                            |  |  |
| IT9(G)                                                                      | Uses assistant(s) to the best advantage at all times                                                                                         |  |  |
| IT10(G)                                                                     | Communicates clearly and consistently with the scrub team                                                                                    |  |  |
| IT11(G)                                                                     | Communicates clearly and consistently with the anaesthetist                                                                                  |  |  |
| IT12(T)                                                                     | Demonstrates safe and correct techniques of reduction with or without use of tools (K-wires/clamps)                                          |  |  |
| IT13(T)                                                                     | Selects and applies device correctly and safely, avoiding neurovascular bundle                                                               |  |  |
| IT14(T)                                                                     | Uses intraoperative radiography appropriately                                                                                                |  |  |
| <b>VI. Post operative management</b>                                        |                                                                                                                                              |  |  |
| PM1                                                                         | Ensures the patient is transferred safely from the operating table to bed                                                                    |  |  |
| PM2                                                                         | Writes a clear operative note                                                                                                                |  |  |
| PM3                                                                         | Records clear and appropriate post-procedure instructions – including pain management, wound management, antibiotics and rehabilitation plan |  |  |
| PM4                                                                         | Deals with specimens sent for microbiology and histopathology – including correct labelling and orientating                                  |  |  |

**Global Summary**

| Level at which completed elements of the PBA were performed on this occasion |                                                                                            | Tick as appropriate |
|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------|
| Level 0                                                                      | Insufficient evidence observed to support a summary judgement                              |                     |
| Level 1                                                                      | Unable to perform the procedure, or part observed, under supervision                       |                     |
| Level 2                                                                      | Able to perform the procedure, or part observed, under supervision                         |                     |
| Level 3                                                                      | Able to perform the procedure with minimum supervision (needed occasional help)            |                     |
| Level 4                                                                      | Competent to perform the procedure unsupervised (could deal with complications that arose) |                     |

**Comments by Assessor (including strengths and areas for development):**

|                           |                            |
|---------------------------|----------------------------|
| <b>Trainee Signature:</b> | <b>Assessor Signature:</b> |
|---------------------------|----------------------------|



TITLE OF PAPER

**[Title: uppercase, Times New Roman, font size 12, centered]**

Author Name<sup>1\*</sup>, Author Name<sup>2</sup> & Author Name<sup>3</sup>

**[Use full name of all authors, Times New Roman, font size 12, superscript 1, 2, 3 etc. to indicate affiliation, centered]**

*<sup>1</sup>School of Chemical Science and Food Technology, Faculty of Science and Technology*

*Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia*

*<sup>2</sup>School of Applied Physics, Faculty of Science and Technology*

*Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia*

**[Indicate authors' affiliation with superscript 1, 2, 3, etc. and start each address on new line, Times New Roman, font size 12, *italic*, centered]**

*\*Corresponding author: email address* **[Times New Roman, *italic*, font size 12]**

## **Abstract**

**xviii**

The manuscript must include an abstract, describing its main points within 150-250 words in the Malay and English language. For authors who are unable to provide the Malay Language version of the abstract, the editor will help.

Keywords: **[3-5 words; Times New Roman; font size 12; arrange alphabetically]**

## **Abstrak**

Makalah mesti mengandungi abstrak yang menerangkan perkara utama dengan 150-250 patah perkataan dalam Bahasa Inggeris dan Melayu.

Kata kunci: **[3-5 perkataan; saiz huruf 12; disusun mengikut abjad]**

## **Introduction**

**[All first order headings use Times New Roman, font size 12, bold and centered]**

The manuscript should be typed with double spacing, single column and font size 12 on A4 paper not exceeding 25 pages. In general, the contents should comprise of Introduction, Materials and Methods, Results and Discussion, Conclusion, Acknowledgement and References. The manuscript should be supplied with 3-5 keywords.

## **Materials and Methods**

**[Second order headings should be bold, font size 12, bold and centered]**

Sains Malaysiana is a refereed journal committed to the advancement of scholarly knowledge and research findings of the several branches of science and technology. It contains articles on earth Sciences, Health Sciences, Mathematical Sciences and Physical Sciences. The journal publishes articles, reviews and research notes whose content and approach are of interest to a wide range of scholars.

## **Results and Discussion**

All illustrations including figures, charts and graphs must be labelled and supplied on pages separate from the text. The desired placement in the text should be clearly indicated. These illustrations should be referred to and numbered serial, as figures (Figure 1). All illustrations should be clearly drawn in permanent ink or photographed in sharp black and white and reproduced in the form of high – contrast glossy prints or digital images and provided in camera ready form. References in the text should be denoted by giving the name(s) of the author(s). All alphabetically ordered references list should be included at the end of the manuscript. All references cited in the text must appear in the reference list. Authors are responsible for the accuracy and completeness of all information in the reference. Manuscripts must conform to the references in Penerbit UKM style or the Chicago manual of Style (University of Chicago Press). The references style adopted should be consistent throughout the manuscript (Callister 2000; Patterson & Savas 2016; Zainol et al. 2017).

Table 1. [Table text and caption should centered, Times New Roman, font size 12, included in body text]

---

| Titl | Titl | Titl | Titl | Titl |
|------|------|------|------|------|
| e 2  | e 3  | e 4  | e 5  | e 6  |

---

A

B

C

---



Figure 1. [illustration text and caption should centered, font size 12, included in body text]

### **Conclusion**

It is the author's responsibility to ensure that his or her submitted work does not infringe any existing copyright. Authors should obtain permission to reproduce or adapt copyrighted material and provide evidence of approval upon submitting the final version of a manuscript. Manuscripts will be reviewed by the Editorial Board and at least one independent referee.

Decisions regarding the publication of a manuscript will be based on the Board's recommendations. The manuscript will be evaluated based on its appropriateness for *Sains Malaysiana*, contribution to the discipline, cogency of analysis, conceptual breadth, clarity of presentation and technical adequacy. Manuscripts submitted by members of the journal's Editorial Board are subjected to the same review procedure.

### **Acknowledgements**

This template gives formatting guidelines for authors preparing papers for publication in the *Sains Malaysiana*. The authors must follow the instructions given in the document for the papers to be published.

### **References**

**[arrange alphabetically]**

Callister, J.W.D. 2000. *Materials Science and Engineering: An Introduction*. 5th ed. New York:

John Wiley & Sons.

Patterson, R.F. & Savas, E. 2016. On P-convergence of four dimensional weighted sums of double random variables. *Sains Malaysiana* 45(7): 1177-1181.

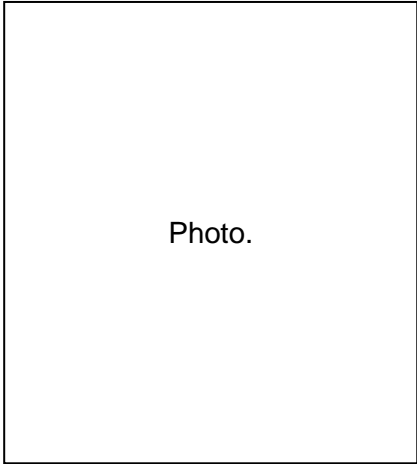
Zainol, M.M., Amin, N.A.S. & Asmadi, M. 2017. Preparation and characterization of impregnated magnetic particles on oil palm frond activated carbon for metal ions removal. *Sains Malaysiana* 46(5): 773-782



UNIVERSITI KEBANGSAAN MALAYSIA  
*The National University of Malaysia*



**DOCTOR OF ORTHOPAEDICS & TRAUMATOLOGY  
(DR. ORTHO. & TRAUMA, UKM)  
THESIS PROGRESS REPORT**



Profile of Candidate:

Name :  
Matric Number :  
Address :  
Contact Number :  
E-mail :

- d) For publications, being listed as the First Author and the Corresponding Author is counted as one publication.
- e) Need to be submitted one (1) month before the date of formative assessment.
- f) Publication that will be accepted only publication in the ISI, WoS / ERA / ESCI index journal.

| CATEGORY                    | MINIMUM NO. OF PUBLICATION OR CASE WRITE-UP TO BE COMPLETED (cumulative)          |
|-----------------------------|-----------------------------------------------------------------------------------|
| End of 1 <sup>st</sup> Year | prove of case that is plan to be send for publication<br>or<br>2 case write-up    |
| End of 2 <sup>nd</sup> Year | 1 publication<br>or<br>5 case write-up                                            |
| End of 3 <sup>rd</sup> Year | 2 publication<br>or<br>1 publication + 5 case write-up<br>or<br>10 case write-up  |
| End of 4 <sup>th</sup> Year | completed                                                                         |
| Summary                     | 2 publications<br>or<br>1 publication + 5 case write-up<br>or<br>10 case write-up |

| CATEGORY                                                                 | DISSERTATION                                                                     |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| End of 1 <sup>st</sup> Year                                              | Proposal Presentation and Ethics Committee Approval                              |
| End of 2 <sup>nd</sup> Year                                              | Data collection                                                                  |
| End of 3 <sup>rd</sup> Year                                              | Completed data collection and Manuscripts submission end of 3 <sup>rd</sup> year |
| End of Semester 1 4 <sup>th</sup> Year                                   | Interview sit for exam                                                           |
| <b>*Need to submit to supervisor one (1) month before interview date</b> |                                                                                  |

| No. of published case write-up                                                                                                 | Total no. of case write-up to be submitted |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| 1                                                                                                                              | 5                                          |
| 2                                                                                                                              | 0 (none)                                   |
| 0 (none)                                                                                                                       | 10                                         |
| ❖ Please take note that the total number of case write-up to be submitted (as above) is exclude of the published case write-up |                                            |

**NOTE:** Failure to comply results in failure to progress to the subsequent year of study or be barred to sit for the final examinations.

# YEAR 1

Place of Attachment :

Hospital :

Supervisor :

E-mail :

Contact No. :

**Progress of Candidate:**

Year 1 (session \_\_\_\_/\_\_\_\_)

| Rotation: | Date: | Supervisor/Signature: |
|-----------|-------|-----------------------|
| 1. _____  | _____ | _____                 |
| 2. _____  | _____ | _____                 |
| 3. _____  | _____ | _____                 |
| 4. _____  | _____ | _____                 |

Place: \_\_\_\_\_

**Dissertation:**

Name of Supervisor/Co-supervisor:

Topic:

1. Literature Review

Date:

Outcome/Plan:

Signature:

Supervisor: \_\_\_\_\_ Candidate: \_\_\_\_\_

2. Proposal

Date:

Outcome/Plan:

Signature:

Supervisor: \_\_\_\_\_ Candidate: \_\_\_\_\_

3. Ethics Committee Submission

Date:

Outcome/Plan:

Signature:

Supervisor: \_\_\_\_\_ Candidate: \_\_\_\_\_

4. Date Approved by EC: (please attached letter of approval) \_\_\_\_\_

5. Progress of Work

Date:

Outcome/Plan:

Signature:

Supervisor

Candidate:

## Case Write Up

xxviii

### Case No: 1

Title :

Date Submitted : Assessor: Supervisor: Candidate:

Date resubmitted : Assessor: Supervisor: Candidate:

Date Accepted: Assessor: Supervisor: Candidate:

### Case No: 2

Title :

Date Submitted : Assessor: Supervisor: Candidate:

Date resubmitted : Assessor: Supervisor: Candidate:

Date Accepted: Assessor: Supervisor: Candidate:

End of year Assessment/Interview:

Date of Assessment:

Report/Comment:

Outcome:

1. Remain in Year 1 (1<sup>ST</sup> TIME)

Reason:

Signature: \_\_\_\_\_

Head,

Dept. of Orthopaedic and Traumatology

Candidate:

2. Promoted to Year 2

Signature: \_\_\_\_\_

Head,

Dept. of Orthopaedic and Traumatology

Candidate:

**Extension - Assessment/Interview:**

**xxx**

Date of Assessment:

Report/Comment:

Outcome:

1. Remain in Year 1 (2<sup>ND</sup> TIME)

Reason:

Signature: \_\_\_\_\_

Head,

Candidate:

Dept. of Orthopaedic and Traumatology

2. Promoted to Year 2

Signature: \_\_\_\_\_

Head,

Candidate:

Dep.t of Orthopaedic and Traumatology

Extension - Assessment/Interview:

Date of Assessment:

Report/Comment:

Outcome:

- 1. Remain in Year 1 (3<sup>RD</sup> TIME)

Reason:

Signature: \_\_\_\_\_

Head, Candidate:

Dept of Orthopaedic and Traumatology

- 2. Promoted to Year 2

Signature: \_\_\_\_\_

Head, Candidate:

Dept of Orthopaedic and Traumatology

# YEAR 2

Place of Attachment :

Hospital :

Supervisor :

E-mail :

Contact No. :

Early of year 2 Assessment/Interview:

Date of Assessment:

Report/Comment:

Outcome:

1. Extension for 6 months

Reason:

Signature: \_\_\_\_\_

Head,

Candidate:

Dept. of Orthopaedic and Traumatology

2. No extension.

Signature: \_\_\_\_\_

Head,

Candidate:

Dept. of Orthopaedic and Traumatology

Progress of Candidate:

Year 2 (session \_\_\_\_/\_\_\_\_)

Rotation:

Date:

Supervisor/Signature:

1. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Place: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Dissertation:

Name of Supervisor/Co-supervisor:

1. Progress of Work

Date:

Outcome/Plan:

Signature:

Supervisor

Candidate:

\_\_\_\_\_

Date:

Outcome/Plan:

Signature:

Supervisor

Candidate:

Date:

XXXXV

Outcome/Plan:

Signature:

Supervisor

Candidate:

---

Date:

Outcome/Plan:

Signature:

Supervisor

Candidate:

---

### Case Write Up

**Case No: 3**

Title :

Date Submitted : Assessor: Supervisor: Candidate:

Date resubmitted : Assessor: Supervisor: Candidate:

Date Accepted: Assessor: Supervisor: Candidate:

**Case No: 4**

Title :

Date Submitted : Assessor: Supervisor: Candidate:

Date resubmitted : Assessor: Supervisor: Candidate:

Date Accepted: Assessor: Supervisor: Candidate:

**Case No: 5**

Title :

Date Submitted : Assessor: Supervisor: Candidate:

Date resubmitted : Assessor: Supervisor: Candidate:

Date Accepted: Assessor: Supervisor: Candidate:

**End of year Assessment/Interview:**

Date of Assessment:

Report/Comment:

Outcome:

1. Remain in Year 2

Reason:

Signature: \_\_\_\_\_

Head,

Dept. of Orthopaedic and Traumatology

Candidate:

2. Promoted to Year 3

Signature: \_\_\_\_\_

Head,

Dept. of Orthopaedic and Traumatology

Candidate:

# YEAR 3

Place of Attachment :

Hospital :

Supervisor :

E-mail :

Contact No. :

**Early of year 3 Assessment/Interview:**

Date of Assessment:

Report/Comment:

Outcome:

1. Extension for 6 months

Reason:

Signature: \_\_\_\_\_

Head,

Candidate:

Dept. of Orthopaedic and Traumatology

2. No extension.

Signature: \_\_\_\_\_

Head,

Candidate:

Dept. of Orthopaedic and Traumatology

**Progress of Candidate:**

Year 3 (session \_\_\_\_/\_\_\_\_)

Rotation:

Date:

Supervisor/Signature:

1. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Place: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Dissertation:**

Name of Supervisor/Co-supervisor:

Topic:

1. Progress of Work

Date:

Outcome/Plan:

Signature:

Supervisor

Candidate:

\_\_\_\_\_

Date:

Outcome/Plan:

Signature:

Supervisor

Candidate:

\_\_\_\_\_

Date:

Outcome/Plan:

Signature:

Supervisor

Candidate:

## Case Write Up

**xli**

### **Case No: 6**

Title :

Date Submitted : Assessor: Supervisor: Candidate:

Date resubmitted : Assessor: Supervisor: Candidate:

Date Accepted: Assessor: Supervisor: Candidate:

### **Case No: 7**

Title :

Date Submitted : Assessor: Supervisor: Candidate:

Date resubmitted : Assessor: Supervisor: Candidate:

Date Accepted: Assessor: Supervisor: Candidate:

### **Case No: 8**

Title :

Date Submitted : Assessor: Supervisor: Candidate:

Date resubmitted : Assessor: Supervisor: Candidate:

Date Accepted: Assessor: Supervisor: Candidate:

**Case No: 9**

Title :

Date Submitted : Assessor: Supervisor: Candidate:

Date resubmitted : Assessor: Supervisor: Candidate:

Date Accepted: Assessor: Supervisor: Candidate:

**Case No: 10**

Title :

Date Submitted : Assessor: Supervisor: Candidate:

Date resubmitted : Assessor: Supervisor: Candidate:

Date Accepted: Assessor: Supervisor: Candidate:

**End of year 3 Assessment/Interview:**

Date of Assessment:

Report/Comment:

Outcome:

1. Remain in Year 3 (Extension 6 months)

Reason:

Signature:

\_\_\_\_\_

\_\_\_\_\_

Head,

Candidate:

Dept of Orthopaedic and Traumatology

2. Promoted to Year 4

Signature:

\_\_\_\_\_

\_\_\_\_\_

Head,

Candidate:

Dept of Orthopaedic and Traumatology

# YEAR 4

Place of Attachment :

Hospital :

Supervisor :

E-mail :

Contact No. :

Progress of Candidate:

Year 4 (session \_\_\_\_/\_\_\_\_)

| Rotation: | Date: | Supervisor/Signature: |
|-----------|-------|-----------------------|
| 1. _____  | _____ | _____                 |
| 2. _____  | _____ | _____                 |
| 3. _____  | _____ | _____                 |

Place: \_\_\_\_\_

| Rotation:<br>(Repeat/<br>Electives) | Date: | Supervisor/Signature: |
|-------------------------------------|-------|-----------------------|
| 1. _____                            | _____ | _____                 |
| 2. _____                            | _____ | _____                 |
| 3. _____                            | _____ | _____                 |
| 4. _____                            | _____ | _____                 |

Place: \_\_\_\_\_

Dissertation:

Name of Supervisor/Co-supervisor:

Topic:

1. Progress of Work

Date:

Outcome/Plan:

Signature:

Supervisor

Candidate:

---

Date:

Outcome/Plan:

Signature:

Supervisor

Candidate:

---

Date:

Outcome/Plan:

Signature:

Supervisor

Candidate:

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**xlvii**

Date:

Outcome/Plan:

Signature:

Supervisor

Candidate:

---

End of year Assessment/Interview:

Date of Assessment:

Report/Comment:

Outcome:

1. Repeat Rotation: (1<sup>ST</sup> TIME)

Reason:

Signature: \_\_\_\_\_

Head,

Candidate:

Dept. of Orthopaedic and Traumatology

2. Electives Posting;

Signature: \_\_\_\_\_

Head,

Candidate:

Dept. of Orthopaedic and Traumatology

Extension - Assessment/Interview:

Date of Assessment:

Report/Comment:

Outcome:

1. Repeat Rotation: (2<sup>ND</sup> TIME)

Reason:

Signature: \_\_\_\_\_

Head,

Candidate:

Dept. of Orthopaedic and Traumatology

2. Electives Posting;

Signature: \_\_\_\_\_

Head,

Candidate:

Dept. of Orthopaedic and Traumatology

**Extension - Assessment/Interview:**

Date of Assessment:

Report/Comment:

Outcome:

1. Repeat Rotation: (3<sup>RD</sup> TIME)

Reason:

Signature: \_\_\_\_\_

Head,

Candidate:

Dept. of Orthopaedic and Traumatology

2. Electives Posting;

Signature: \_\_\_\_\_

Head,

Candidate:

Dept. of Orthopaedic and Traumatology

Assessment/Interview for eligibility to sit for Final Examination:

Date of Assessment:

Report/Comment:

Outcome:

1. Remain in Year 4(extension for 6 months)

Reason:

Signature: \_\_\_\_\_

Head,

Dept. of Orthopaedic and Traumatology

Candidate:

2. Allow to sit for the Final Examination

Signature: \_\_\_\_\_

Head,

Dept. of Orthopaedic and Traumatology

Candidate:

**Lampiran XIII: Jadual Penyelarasan Syarat Bergraduat dan Penerbitan**  
*Attachment XIII: Graduation and Publication Requirements Coordination Table*

| Program      | Sedia Ada<br>(Kemasukan Sesi 2014/2015)          |                       |                   | TERKINI (Kemasukan Semester 1 Sesi 2018/2019)<br>Petikan Mesyuarat Senat ke 451 bertarikh 16 Januari 2019 |                       |                                                                                                                                                                                                                                                                                                                                                                                       | TERKINI (Kemasukan Semester 1 Sesi 2019/2020)<br>Petikan Mesyuarat Senat ke 451 bertarikh 16 Januari 2019 |                       |                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------|--------------------------------------------------|-----------------------|-------------------|-----------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Bentuk Penulisan                                 | Syarat Menduduki Viva | Syarat Bergraduat | Bentuk Penulisan                                                                                          | Syarat Menduduki Viva | Syarat Bergraduat                                                                                                                                                                                                                                                                                                                                                                     | Bentuk Penulisan                                                                                          | Syarat Menduduki Viva | Syarat Bergraduat                                                                                                                                                                                                                                                                                                                                                                     |
| Doktor Pakar | Manuskrip (Artikel Penyelidikan dan Laporan Kes) | Tiada                 | Tiada             | Manuskrip (Artikel Penyelidikan dan Laporan Kes)                                                          | Tiada                 | <ol style="list-style-type: none"> <li>Syarat Kursus Wajib:<br/>Kursus Bahasa Melayu (Pelajar Antrabangsa);<br/><b>DAN</b></li> <li>Bukti penghantaran satu (1) manuskrip ke jurnal berwasit;<br/><b>ATAU</b><br/>Membentang sekurang-kurangnya satu (1) kertas penyelidikan di persidangan tempatan/ antarabangsa;<br/><b>ATAU</b><br/>Menerbit dalam satu (1) prosiding.</li> </ol> | Manuskrip (Artikel Penyelidikan dan Laporan Kes)                                                          | Tiada                 | <ol style="list-style-type: none"> <li>Syarat Kursus Wajib:<br/>Kursus Bahasa Melayu (Pelajar Antrabangsa);<br/><b>DAN</b></li> <li>Bukti penghantaran satu (1) manuskrip ke jurnal berwasit;<br/><b>ATAU</b><br/>Membentang sekurang-kurangnya satu (1) kertas penyelidikan di persidangan tempatan/ antarabangsa;<br/><b>ATAU</b><br/>Menerbit dalam satu (1) prosiding.</li> </ol> |

**Lampiran XIV: Borang Semak Syarat Bergraduat**  
*Attachment XIV: Graduation Requirements Check Form*

iii



Kuatkuasa : 30 September 2024

**SENARAI SEMAK SYARAT BERGRADUAT BAGI PELAJAR PROGRAM DOKTOR PAKAR**

**SEKRETARIAT PENGAJIAN SISWAZAH, FAKULTI PERUBATAN**

Nama Pelajar : .....

No. Pendaftaran : .....

Program Pengajian : .....

Tandakan (/) bagi setiap kriteria syarat bergraduat di bawah :

| BIL. | SYARAT BERGRADUAT                                                                                           | TANDAKAN ( / ) |
|------|-------------------------------------------------------------------------------------------------------------|----------------|
| 1.   | Syarat Kursus Wajib : Kursus Bahasa Melayu (Pelajar Antarabangsa).                                          |                |
| 2.   | Penulisan disertasi dengan format yang ditentukan oleh Fakulti Perubatan.                                   |                |
| 3.   | i. Bukti penghantaran satu (1) artikel ke jurnal berwasit; atau                                             |                |
|      | ii. Membentang sekurang-kurangnya satu (1) kertas penyelidikan di persidangan tempatan / antarabangsa; atau |                |
|      | iii. Menerbit dalam satu (1) prosiding.                                                                     |                |

Tandatangan dan cop rasmi Ketua Jabatan :

Tarikh :

- \*Nota** : 1. Borang ini perlu diisi bagi pelajar berstatus Lulus dan Layak Dianugerahkan Ijazah.  
2. Mohon sertakan bersama salinan kad pengenalan pelajar untuk tujuan pengesahan nama pelajar.

*Rujukan / References:*

3. 2024, ISBN 978-629-99536-0-9, Master of Orthopaedic Surgery and Traumatology, Curriculum Guidebook, Department of Orthopaedic Surgery and Traumatology, Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, 47000 Sungai Buloh, Selangor
4. Edisi Semakan 2022, Garis Panduan Penulisan Tesis/Disertasi Kompilasi
5. 2022, Garis Panduan Aduan Salah Laku Pengajian Siswazah
6. Edisi semakan 2021, ISBN: 978-967-19574, Peraturan-Peraturan Universiti Kebangsaan Malaysia (Pengajian Siswazah), Program Sarjana dan Kedoktoran
7. Edisi Semakan 2021, Garis Panduan Penyeliaan Pelajar Siswazah
8. 2021, Version 1, ISBN 978-967-19566-3-2, Orthopaedic Specialty Committee, Orthopaedic Surgery Postgraduate Training in Malaysia: Training Curriculum. Majlis Dekan Fakulti Perubatan Universiti Awam Malaysia.
9. 2019, Garis Panduan Peperiksaan Klinikal (Doktor Pakar Klinikal) Fakulti Perubatan Universiti Kebangsaan Malaysia (UKM)
10. 2019, Buku Peraturan Tatatertib Pelajar Fakulti Perubatan UKM



