MASTER OF ORTHOPAEDIC SURGERY AND TRAUMATOLOGY

CURRICULUM GUIDEBOOK

Department of Orthopaedic Surgery & Traumatology
Universiti Teknologi MARA

MASTER OF ORTHOPAEDIC SURGERY AND TRAUMATOLOGY

CURRICULUM GUIDEBOOK

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Master of Orthopaedic Surgery and Traumatology
Curriculum Guidebook
Universiti Teknologi MARA

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Philosophy

Every individual has the ability to attain excellence through the transfer of knowledge and assimilation of moral values so as to become professional graduates capable of developing knowledge, self, society and nation.

Vision

To establish UiTM as a globally renowned university of science, technology, humanities and entrepreneurship.

Mission

To lead the development of agile, professional Bumiputeras through state-of-the-art curricula and impactful research.

Objectives

1. To expedite accessibility to higher education.
2. To provide world-class education.
3. To offer competitive academic programmes that fulfil market needs, spearhead national development and promote global prosperity.
4. To produce well-balanced, entrepreneurial graduates who are globally competent.
5. To strengthen the internalisation of values via enhancement programmes
6. To sustain organisational excellence through effective and efficient governance.
7. To champion impactful research through a stronger research ecosystem.
8. To strengthen strategic alliance with alumni and industries.
9. To provide a cutting edge ecosystem conducive for academic advancement.
10. To regulate cost-effective financial practices towards organisational sustainability

CONTENT

INTRODUCTION

"Master of Orthopaedic Surgery & Traumatology" is a new postgraduate degree program offered by the Faculty of Medicine, UiTM. It provides an avenue for Malaysian and international candidates to pursue the field and achieve their goal of becoming an orthopaedic surgeon. As the program is comprehensive, spanning four years, it is hoped that this guidebook will provide relevant information for all trainees and familiarize them with the new environment.

UiTM's Master of Orthopaedic Surgery & Traumatology follows the strict regulations set by the Orthopaedic Specialty Committee and the Postgraduate Office at UiTM's Sungai Buloh campus. It has adopted the National Orthopaedic Curriculum (NOC), launched in late August 2021, which encompasses the syllabus, learning opportunities, evaluation, and conduct of the trainees during the four-year period.

This guidebook aims to provide all trainees with an overview of the program and their journey within it. We hope that it will answer any questions trainees may have and provide solutions to facilitate their progress in the course.

We would like to wish you the very best throughout this journey in becoming an orthopaedic surgeon.

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OBJECTIVES

Our program is aligned with and supportive of the vision, mission and objectives statements of the university. We are dedicated to producing orthopaedic surgeons who embody agility, knowledge, compassion, humanistic values, impactful research capabilities, entrepreneurship skills, and demonstrate smart and effective financial practices.

Our objectives are to produce orthopaedic surgeons who:

- apply knowledge and solve problems in orthopaedic and traumatology cases.
- display good functional work skills in orthopaedic and traumatology cases.
- demonstrate good personal skills, entrepreneurial skills, ethics, and professionalism in the field of orthopaedic and traumatology training and research.

ADMISSION CRITERIA

Candidates from the Ministry of Health (MOH) are required to submit their applications online via the MOH Training Division. The MOH is responsible for the initial round of candidate selection. The MOH Training Division will submit the list of successful candidates to the Selection of Postgraduate Orthopaedic Training (SPOT) Committee. While private or international candidates should apply directly to the Head of the Department of Orthopaedic Surgery and Traumatology at UiTM. The application process is open throughout the year.

Alongside international and private candidates, 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 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.

Admission criteria for Malaysian and International Applicants are:

1. At least three (3) years after obtaining a Bachelor of Medicine (MD) or Bachelor of Medicine and Bachelor of Surgery (MBBS) or other equivalent medical qualification from an institution of higher learning from within or outside the country recognized by the Senate and the Malaysian government.
2. Have six (6) months of experience serving in any Department of Orthopaedic & Traumatology as a medical officer.
3. Fulfil the minimum grade at the MedEx pre-entry examination, SPOT and student recruitment interview.
4. Registered with the Malaysian Medical Council (MMC).
5. Obtain at least two (2) good reports from the referee (physician/ surgeon/ health service administrator).
6. Healthy body and under 40 years old at the time of registration.
7. All recruitment will be subject to the conditions and policies set by Universiti Teknologi MARA.

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

1. Registered with the Medical Council of the country of origin and enclose the original copy of the "Good Standing Certificate."
2. Registered with the MMC and obtained temporary registration.
3. Fluent in English: TOEFL score paper-based 498-546 or IELTS band 6 or TOEIC score 570-684. Exemption from UiTM English Language Requirement is only allowed if the candidate:
    - Has obtained a Bachelor's/Master's or other relevant degree from a Malaysian recognized institution where all courses are fully conducted in English, or
    - Is a native speaker of English, or
    - Has graduated from any higher learning institution that uses the English Language as the medium of instruction.
4. Has a scholarship or financial security.

REGISTRATION

Virtual registration is conducted via: https://ipsis.uitm.edu.my/index.php/programme/online-registration (scan the QR code provided below) during the virtual registration week.

ORIENTATION

An orientation week will be held at the beginning of the first semester to ensure that students are properly introduced to the faculty and campus facilities. They will be given adequate time to explore the facilities, understand their roles, and clarify any matters related to the program. During this orientation week, teaching-learning methodologies and assessment schedules will also be communicated to the students. Additionally, a random and unbiased allocation of students to groups of lecturers will be conducted. Each student will be assigned a main supervisor along with two co-supervisors. These lecturers will serve as their supervisors for the dissertation project throughout the duration of this 4-year program.

COURSE STRUCTURE & FORMAT

This is a 4-year (8-semester) program. The maximum period allowed is 7 years (14 semesters). The Postgraduate Orthopaedic Training Programme is divided into twelve blocks of four months each, totaling 48 months.

In the first year, trainees undergo three Trauma rotations. They must satisfactorily complete all three rotations before progressing to Year 2.

For Years 2 until 4, there are eight subspecialty rotations conducted in 4-month blocks. The topics covered by Rehabilitation Medicine should be integrated within the rotation, covering related modalities with respect to that rotation. The final 4 months before the Exit Examination are reserved for Electives or for trainees to repeat one rotation they have not satisfactorily completed.

Summary of rotations during the programme:

	Rotation (Month 1-4)	**Rotation (Month 5-8)**	**Rotation (Month 9-12)**		**Assessment at End of Year (EOY)**
Year 1	Trauma 1	Trauma 2	Trauma 3		EOY1
Year 2	Sub 1	Sub 2	Sub 3		EOY2
Year 3	Sub 4	Sub 5	Sub 6		EOY3
Year 4	Sub 7	Sub 8	EOY4	Electives / Repeat	Exit Examination

Subspeciality:

1. Advanced Musculoskeletal Trauma & Limb Lengthening Reconstruction Surgery
2. Arthroplasty Surgery
3. Foot and Ankle Surgery
4. Hand and Microsurgery
5. Orthopaedic Oncology Surgery
6. Paediatric Orthopaedics Surgery
7. Spine Surgery
8. Sports Injury & Arthroscopic Surgery

DUTIES & RESPONSIBILITIES

As part of the Master Orthopaedic Surgery & Traumatology, trainees are expected to engage in various clinical activities, including ward and clinic duties, conducting operations, and being on-call.

Ward

Trainees must participate in daily rounds and regularly review patients, actively engaging in their care. Interactive discussions with lecturers should be conducted on a case-by-case basis to stimulate the learning process.

Clinic

Each specialty will designate specific days for clinic attendance, which is compulsory. If any subspecialty requires additional assistance to run the clinic, trainees should make themselves available. Direct patient interaction offers invaluable learning experiences beyond theoretical study. The presence of lecturers during clinic sessions also facilitates the refinement and correction of examination skills.

Operation Theatre

Trainees are expected to apply their knowledge and develop operating skills during their training. Initially, they are required to perform minor and trauma cases under supervision, progressing to independent procedures. Additionally, trainees should assist in subspecialty operations.

On-Call

Junior trainees initially undertake 1st call duties and later progress to 2nd call duties. During 1st call, trainees receive referrals from the Emergency Department and wards, devise management plans, while during 2nd call, they perform emergency surgical procedures. A specialist or consultant is assigned daily, and a passover session is conducted the next day to discuss cases thoroughly.

TEACHING

Medicine undergoes rapid changes due to advancements in scientific information and technology. To stay abreast of these developments, trainees must continue learning throughout their professional careers. Medical education doesn't conclude after medical school; it extends through lifelong learning, known as Continuing Medical Education (CME).

Each week, a variety of educational activities will be conducted on a rotational basis. These include CME sessions, Journal Club meetings, X-ray Census reviews, Morbidity & Mortality meetings, and multidisciplinary clinicopathological or radiology conferences. Topics for CME sessions will be assigned by the lecturer of the respective subspecialty. Trainees are encouraged to discuss their presentations with the lecturer beforehand to ensure they possess adequate knowledge of the subject and convey accurate information.

To prepare trainees for the exit examination, weekly discussions on modified long cases and short cases will be held, which all trainees are expected to attend. Additionally, each subspecialty will conduct specific tutorials or lectures during the training rotation, according to the allocated day.

COURSES & WORKSHOP

During postgraduate training, trainees are encouraged to attend various courses and workshops as part of their Continuing Professional Development (CPD). These activities aim to enhance and broaden orthopaedic knowledge, understanding, and skills, while also fostering the personal qualities necessary for executing professional duties throughout one's career.

Certain courses are considered essential for trainees, while others are recommended to help them progress in the Master of Orthopaedic Surgery and Traumatology program.

Essential Courses:

Course	Example
Basic & Advance Fracture Fixation	UiTM Trauma Course, Melaka Trauma Workshop
Trauma Life Support	UiTM Basic Trauma Life Support Course, Advance Trauma Life Support
Preparatory Exam Course	Orthopaedic Survivor Course, Postgraduate Intensive Course

Beneficial Courses:

- AO Recon Course – Principles of Total Hip and Knee Arthroplasty
- Deformity Correction Course
- Hip Spica and Ponseti Course
- Instructional Spine Course
- National Advance Trauma & Ilizarov Workshop
- National Basic Arthroplasty Course
- National Foot & Ankle Trauma Course
- National Orthopaedic Oncology Revision Course
- National Sports Injury and Arthroscopy Revision Course
- Paediatric Orthopaedic Preparatory Course
- Paediatric Trauma course
- Postgraduate Orthopaedic Oncology Workshop
- Tendon Repair & Rehabilitation Workshop

ASSESSMENT

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

1. Formative Assessment
    - Case-based Discussion (CbD)
    - Procedure Based Assessment (PBA)
    - Mini Clinical Evaluation Exercise (Mini CEX)
    - Logbook of Operative Experience
    - Case Report
    - Trainer's Report & Learning Agreement – every 4 months
    - Supervisor's Report, Learning Agreement – every 4 months

    

    End of year review
    - Exit Essential Learning Activity

2. Research Assessment

3. Summative Assessment (Exit Examination)
    i. Written
        - Best Answer Questions
        - Essay 1 and 2

    ii. Clinical Examination
        - Objective Structured Clinical Examination (OSCE)
        - Viva voce 1 & 2
        - Modified Long Case
        - Short Case

FORMATIVE ASSESSMENTS

Case-based Discussion (CbD)
Trainees present relevant patient notes, and the trainer (assessor) chooses 2 suitable cases. A minimum of TWO (2) CbD assessment sheets per rotation is required.

Procedure Based Assessment (PBA)
Trainees must present the entire collection of completed PBA assessment sheets along with a summary sheet. The records must demonstrate completion of assessments on a regular basis throughout training. A minimum of THREE (3) PBA assessment sheets per procedure per rotation is required, showing progression.

Mini Clinical Evaluation Exercise (Mini-CEX)
Trainees must present cases to their trainers, who will assess them according to the Mini-CEX assessment sheet. The trainee is responsible for record-keeping throughout training. A minimum of SEVEN (7) Mini-CEX assessment sheets per rotation is required, showing a variety of cases.

Trainer's Report
Apart from providing constructive feedback to trainees through workplace assessment tools (PBA, CbD, and Mini-CEX), this report also includes attendance at conferences and workshops, attachments, clinical fellowships, and current and past research activities to demonstrate continuing personal and professional development. The report should be provided by the trainer to the trainee upon completing each rotation.

Supervisor's Report
The supervisor's report should follow the trainer's report for every rotation. Apart from monitoring and managing the trainer-trainee relationship when necessary, the supervisor will meet the trainee regularly and informally to help identify problems and implement solutions. The supervisor will also supervise the trainee in Research, Audit, and Quality Improvement (RAQI) related assessments and clinical reports.

LOGBOOK OF OPERATIVE EXPERIENCE

Description
The logbook serves as a record of the number and variety of procedures performed, as well as the supervision provided. It offers a comprehensive overview of the breadth of the trainee's surgical experience and is essential for monitoring and assessment purposes. It is a prerequisite for the Exit Examination.

Function
Logbooks offer a quick overview of the range of surgical training achieved. Trainees must record the date and patient information for each listed procedure. The record should be verified by the trainer or surgeon who performed or supervised the procedure. Any special circumstances or events related to the procedures should also be documented. Trainees are responsible for maintaining their logbook as an essential part of training and evidence of experience. Therefore, they are advised to keep an up-to-date safe copy or backup (i.e., digital copy or photocopy) in case of issues.

Target Groups
Trainees must actively maintain their logbook throughout the training period. This includes ensuring each entry is accurate and up-to-date, especially regarding post-operative events or patient outcomes, and taking appropriate steps to certify completed tasks.

Frequency of Assessment
The logbook will be reviewed by the trainer during the End of Rotation meeting and by the supervisor during the Four-Monthly Training Review. Their findings will be recorded in the respective reports.

Standardisation
Entries should follow the format provided in the logbook; no other format is permitted. Trainees are advised to categorize their logbooks by various subspecialties.

CASE REPORT

For the Master of Orthopaedic Surgery and Traumatology program, trainees are required to write ten case reports. They must submit two case reports for the trauma rotation (one for each semester) and one case report for each subspecialty rotation. The selected cases should be interesting, unique, and offer educational value; ideally, they should be suitable for publication. Trainees should submit their written case reports to the trainer for each rotation to be reviewed and corrected prior to the End of Year assessment by the Subcommittee on Orthopaedic Training (SCOT).

Case report should be written following Malaysian Orthopaedic Journal (MOJ) format. https://www.morthoj.org/instructions-for-authors.php (scan the QR code provided below).

END OF YEAR ASSESSMENT

The annual End of Year (EOY) assessments are designed to monitor trainee progress and are conducted by the SCOT. Achieving a Satisfactory grade in all components allows trainees to advance to the next stage of training. Trainees receiving an Unsatisfactory grade are identified, and remedial steps are then taken to support their learning.

To achieve a "Satisfactory (S)" grade in each rotation, trainees must:

1. Complete a minimum number of formative assessments.
2. Maintain an up-to-date logbook.
3. Receive a satisfactory Trainer's Report.

Satisfactory progress in Research, Audit, Quality Improvement (RAQI) based on the Supervisor's Report is required during EOY assessments.

RESEARCH

COURSE CODE: ORT 704

Each trainee is required to produce a research work as part of their coursework, which is one of the requirements to sit for the exit examination. The research work will take the form of a manuscript. Trainees are expected to:

i. Consult regularly with their supervisors to discuss the research proposal.
ii. Present the research proposal by the end of Semester 1.

Research Proposal

Trainees should begin preparing their research proposal within 6 months of starting the program. The proposal will be assessed by the Postgraduate Research Committee (PRC) during the research proposal presentation meeting.

The outcome of the PRC assessment may fall into one of the following four (4) categories:

i. Proposal accepted without amendments.
   The student can proceed with submission to the PRC.
ii. Proposal accepted with minimal amendments.
   The proposal, with amendments as recommended by the PRC, must be submitted to and verified by the PRC within one (1) month of the research proposal presentation. The student can then proceed with submission to the PRC.
iii. Major amendments.
   The student is required to resubmit the amended proposal and present it again to the PRC.
iv. Proposal rejected.
   The student must prepare a new proposal and present it again to the PRC.

Two weeks after the presentation of the accepted research proposal, the student MUST submit the application to the Research Ethics Committee (REC).

Data Collection

All research data must be stored and safely kept by the candidate themselves.

Quality and Integrity of the Thesis/Dissertation

The responsibility for writing, preparing, and submitting the proposal/thesis within the stipulated time period rests with the student. The research work submitted for examination should demonstrate that the student:

i. is familiar with the relevant literature and has critically reviewed it.
ii. possesses mastery of the theoretical and conceptual frameworks of the study.
iii. understands the research methodology, tools utilized, and the subsequent treatment of the data.
iv. has good writing skills and can present a substantial body of information clearly, concisely, and comprehensibly.

Students are advised to adhere to the latest edition of the Guidelines on Thesis/Dissertation Format by the Institute of Graduate Studies (IGS). A thesis, report, or piece of work previously submitted to a degree-awarding body will not be accepted.

Process of Research Work Submission

The trainee is required to:

i. Submit the completed research work, endorsed by the supervisor.
ii. Attach the Originality Report.
iii. Submit two (2) spiral-bound copies of the research work to the PRC
iv. 6 months prior to the Exit examinations.

The submitted research work will be screened for compliance with writing format guidelines using the IGS Guidelines for research work. Non-compliance will result in denial of submission.

SYLLABUS

TRAUMA

PLACEMENT: HOSPITAL AL-SULTAN ABDULLAH / HOSPITAL SELAYANG / HOSPITAL SG BULOH / HOSPITAL TENGKU AMPUAN RAHIMAH KLANG
COURSE CODE: ORT 701, ORT 702 & ORT 703
CREDIT VALUE: 39

Theory and clinical

Candidates are required to obtain adequate knowledge of:

- Advanced trauma life support (ATLS)
- Evaluation, resuscitation and damage control orthopaedic
- Orthopaedic trauma emergencies – open fracture, compartment syndrome, fat embolism and others
- Extraarticular lower limb fractures
- Upper limb fractures
- Lower limb dislocations
- Orthopaedic infections – osteomyelitis, septic arthritis, necrotizing fasciitis and diabetic foot ulcers
- Upper and lower amputations
- Biomechanics and biomaterials
    - Musculoskeletal biomechanics
    - Biological materials
    - Materials in orthopaedics implants
    - Biomechanic of fracture fixation
    - Bearing material (tribology) of artificial joints
- Surgical principles and equipment
    - Principles of safe surgery and clinical practice
    - Diathermy
    - Neuromonitoring
    - Skin and skeletal traction
    - Sterilisation and disinfectant
    - Sutures and needles
    - Tourniquet
    - Vascular doppler
    - Traction

Essential procedures

- Arthrotomy
- Bone grafting – autologous from ASIS and PSIS, allograft
- Closed manipulative reduction and application of full-length cast under sedation – upper limb and lower limb
- Early complication following trauma – review and management of painful swollen extremities post trauma – compartment syndrome, fractures, vascular injury, crush syndrome, fat embolism
- Fixation of peri and intra-articular fractures
- Fluid management in injured patient

- Incision and drainage / toilet & suturing / debridement
- Initial assessment of patient with possible acute musculoskeletal infection
- Intramedullary nailing of the tibia and femur
- K-wiring techniques
- Lag screw fixation
- Large joint aspiration and injection
- Local anaesthesia use – local blocks – upper and lower limbs
- Local anaesthesia use – regional blocks – upper and lower limbs
- Lower limb amputation – transtibial and transfemoral
- Major traumatic amputations and crush injuries
- Management of acute dislocations with and without fractures
- Management of late fracture complications (general/local) – VTE, mal-union, non-union)
- Management of implant-associated infection
- Management of neurovascular injuries
- Management of open fractures
- Management of pelvis injuries – acute
- Management of pelvis injuries – definitive
- Management of septic arthritis
- Management of polytrauma patients – ETC, DCO
- Plating of long bone fractures
- Sequestrectomy / bone resection in osteomyelitis
- Spinal trauma – urgent assessment of patient with possible cervical spine injury
- Split skin grafting
- Tension band wiring – patella, olecranon
- Uniaxial external fixation of extremities
- Wide Awake Local Anaesthesia No Tourniquet (WALANT)

- Shoulder & Elbow
  - Fixation of complex intra-articular fractures of the shoulder and elbow
  - Fracture fixation of the shoulder, humerus and elbow with or without ligamentous repair – including IM nailing
  - Treatment of fracture-dislocations of the shoulder and elbow – non operative
  - Treatment of fracture-dislocations of the shoulder and elbow – operative
  - Amputation – fore-quarter, proximal and distal to the elbow, disarticulation.
  - Arthrodesis of the shoulder and elbow

- Hip
  - Amputation – hip disarticulation, hindquarter
  - Hip hemiarthroplasty
  - Advanced intramedullary nailing – eg. Proximal femur, reconstruction, retrograde
  - Treatment of fracture-dislocation of the hip

- Knee
  - Advanced intramedullary nailing – supracondylar, retrograde
  - Arthroscopic lavage of septic arthritis of the knee
  - Disarticulation of the knee
  - Fixation of ACL or PCL avulsion
  - Fixation of complex intra-articular knee fractures
  - Fixation of fracture-dislocations of the knee

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SPORTS INJURY & ARTHROSCOPIC SURGERY

PLACEMENT: HOSPITAL AL-SULTAN ABDULLAH

COURSE CODE: ORT 731

CREDIT VALUE: 13

Theory and clinical

Candidates are required to obtain adequate knowledge:

- Basic science - anatomy, biomechanics and pathology
- Arthroscopy
    - Principles of arthroscopy
    - Indications and contraindication
    - Standard and additional portal for knee and shoulder scope
    - Arthroscopic set up and patient positioning
    - Complications of arthroscopic surgery
- Knee injuries and condition - including bursitis, articular cartilage defects, avulsion fractures, ligamentous injuries, meniscal injuries, Osgood-Schlatter disease, patella-femoral disorders and others
- Shoulder conditions / diseases / pathology and management - including acromioclavicular injuries, adhesive capsulitis (frozen shoulder), calcific tendonitis, shoulder dislocation and instability, rotator cuff injuries, scapulothoracic dissociation, shoulder impingement and others
- Elbow conditions / diseases / pathology and management - including elbow dislocation and instability and others
- Overuse syndrome and management - including medial and lateral epicondylitis, femoro-acetabular impingement, snapping hip, trochanteric bursitis and others
- Fundamental knowledge in Sports Medicine and rehabilitation

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FOOT & ANKLE SURGERY
PLACEMENT: HOSPITAL AL-SULTAN ABDULLAH
COURSE CODE: ORT 732
CREDIT VALUE: 13

Theory and clinical
Candidates are required to obtain adequate knowledge:

- Trauma
  - Pilon fracture
  - Talus fracture
  - Calcaneum fracture
  - Lisfranc injury
  - Metatarsal fracture
  - Mangled limbs
  - Achilles tendon injury/tendinopathy
  - Peroneal tendon injury
  - High and low ankle sprain/injury
  - Malleoli fracture
  - Ankle dislocation
- Non-trauma
  - Diabetic foot
  - Charcot's neuropathy
  - Necrotizing fasciitis
  - Ankle osteoarthritis
  - Hallux valgus and forefoot deformities
  - Angular deformities
  - Inflammatory arthropathies
  - Pes planus
  - Pes cavus
  - In-growing toenail
  - Plantar fasciitis

Essential Procedures

- Wound debridement
- Amputations e.g. Ray, transmetatarsal, Chopart, Lisfranc, Syme, BKA, AKA
- Fixation of complex intra-articular foot and ankle fractures
- Fixation of extra-articular calcaneal, simple talar and other simple tarsal bone fractures
- Fixation of fracture-dislocations of foot and ankle with or without ligaments repair
- Open repair of tendons of foot and ankle including Achilles tendon, repair of ligaments and muscles
- ORIF for malleolar, metatarsal and phalanx fractures
- Percutaneous repair of Achilles tendon
- Achilles tendon lengthening
- Resection arthroplasty of foot and ankle, calcaneoplasty
- Ankle arthroscopy – diagnostic, simple therapeutic procedures

- Hallux valgus surgery
- Interphalangeal fusions
- Osteotomy of phalanges
- Posterior tibial tendon dysfunction (PTTD) reconstruction
- Reconstruction of anterior talofibular ligament
- Surgical treatment of ingrowing toenails
- Tibiotalar calcaneal fusion
- Triple fusion
- Fasciotomy of foot

References:

1. Mark D. Miller MD, Stephen R. Thompson (2015), Miller's Review of Orthopaedics (7th Edition). Elsevier
2. Charles L. Saltzman MD (Author), Robert B. Anderson MD (Author), Michael J. Coughlin MD (2013), Mann's Surgery of the Foot and Ankle, 2-Volume Set (9th Edition). Mosby.
3. Harold B. Kitaoka (Author), Deborah Ravin (2002), Master Techniques in Orthopaedic Surgery: The Foot and Ankle (Master Techniques in Orthopaedic Surgery (2nd Edition). Raven Pr.

SPINE SURGERY
PLACEMENT: HOSPITAL AL-SULTAN ABDULLAH
COURSE CODE: ORT 741
CREDIT VALUE: 13

Theory and clinical
Candidates are required to obtain adequate knowledge:

- Basic science
  - Know the main steps in the history of spinal disorders.
  - Understand principles of spinal biomechanics and biomechanics of spinal instrumentation.
  - Know the concepts of cell biology in spine, and the biology of spinal fusion.
  - Understand spinal balance and dysbalance.
  - Have an overview of the epidemiology of spinal disorders, predictors of treatment outcomes and the function of spine registries.
  - Know the principles of pre-operative assessment of a patient, including spinal imaging and neurological investigations.
  - Understand the concepts of anaesthesiological management of a spine patient before, during and after surgery.

    Topics:
    - ✓ Spinal biomechanics
    - ✓ Cell biology of the spine
    - ✓ Age-related changes of the spine
    - ✓ Pathways to spinal pain
    - ✓ Genetics in spinal disorders
    - ✓ Development of spinal disorders
    - ✓ Spinal balance
    - ✓ Biomechanics of spinal instrumentation
    - ✓ Biologics in spine
    - ✓ Predictors of treatment outcome
    - ✓ History and physical examination
    - ✓ Imaging studies
    - ✓ Neurological assessment
    - ✓ Neurophysiological investigations
    - ✓ Preoperative assessment
    - ✓ Intraoperative anaesthesia management
    - ✓ Preoperative care and pain management
    - ✓ The role of muscles in adult spine deformity

- Spine trauma
  - Understand the epidemiology presentation and basic spine anatomy.
  - Request appropriate imaging investigation.
  - Correctly identify and classify the injury.
  - Suggest an appropriate management strategy.

Topics:

- ✓ Cervical spine trauma evaluation
- ✓ Vertebral artery injury
- ✓ Spinal cord injuries
- ✓ Incomplete spinal cord injuries
- ✓ Paediatric spinal cord injuries
- ✓ Pseudosubluxation of the cervical spine
- ✓ Occipitocervical instability
- ✓ Occipital condyle fracture
- ✓ Atlas fracture and transvers ligament injuries
- ✓ Atlantoaxial instability
- ✓ Odontoid fracture
- ✓ Traumatic spondylolisthesis of axis
- ✓ Halo orthosis immobilization
- ✓ Cervical facet dislocation and fracture
- ✓ Subaxial cervical vertebral body fracture
- ✓ Extension teardrop fracture cervical spine
- ✓ Clay-shoveler fracture
- ✓ Closed cervical traction
- ✓ Thoracolumbar burst fracture
- ✓ Chance fracture
- ✓ Thoracolumbar fracture-dislocation
- ✓ Osteoporotic vertebral compression fracture
- ✓ Sacral fractures

- Cervical spine degenerative disorders
  - To acquire the knowledge to assess, evaluate and make the diagnosis of degenerative cervical spine disorders.
  - To learn the decision making for different treatment modalities.
  - To know the evidence of the different treatment modalities.
  - To become familiar with the surgical principles and indications in the treatment of cervical spine degenerative disorders.

    Topics:

    - ✓ Applied surgical anatomy of the cervical spinal column, spina cord, nerve roots and vertebral arteries
    - ✓ Biomechanical consideration of the degenerative cervical spine
    - ✓ Degenerative disorders of the cervical spine
    - ✓ Axial neck pain
    - ✓ Axial neck pain conservative management
    - ✓ Axial neck pain surgical management
    - ✓ Clinical finding, pathophysiology and natural history of cervical radiculopathy
    - ✓ Cervical radiculopathy conservative management
    - ✓ Cervical radiculopathy surgical management
    - ✓ Adjacent disc disease and management of cervical TDR
    - ✓ Pathophysiology, clinical findings and imaging of cervical myelopathy
    - ✓ Cervical myelopathy conservative management

- ✓ Cervical myelopathy surgical management
- ✓ Cervical myelopathy OPLL

- Lumbar degenerative disorders
  - To acquire the knowledge to assess, evaluate and diagnose degenerative disorders of the thoracolumbar spine.
  - To learn the decision making to select different treatment modalities.
  - To know the evidence for the different treatment modalities.
  - To understand the surgical principles of and the indications for the treatment of degenerative disorders of the thoracolumbar spine.

    Topics:
    - ✓ Clinical presentation and diagnostic workup
    - ✓ Classification of disc herniation
    - ✓ Thoracic myelopathy
    - ✓ Lumbar disc herniation conservative management
    - ✓ Lumbar disc herniation surgical management
    - ✓ Imaging in thoracic and lumbar disc herniation and stenosis
    - ✓ Thoracic disc herniations
    - ✓ Lumbar stenosis presentation and natural history
    - ✓ Lumbar stenosis conservative treatment
    - ✓ Lumbar stenosis surgical treatment
    - ✓ Imaging in degenerative lumbar and sacroiliac conditions
    - ✓ Degenerative spondylolisthesis
    - ✓ Degenerative spondylolisthesis surgical treatment
    - ✓ Continuum from degenerative condition to deformity
    - ✓ Sacroiliac joint pain
    - ✓ Management of non-specific low back pain

- Spine tumors
  - Understand biology and pathophysiology of neoplastic conditions affecting the spinal column and associated neural structures.
  - 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.
  - 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.

    Topics:
    - ✓ Intradural extramedullary tumors
    - ✓ Intradural intramedullary tumors
    - ✓ Extradural tumors
    - ✓ Osteoid osteoma
    - ✓ Eosinophilic granuloma
    - ✓ Early life spinal tumors
    - ✓ Primary tumors of sacrum
    - ✓ Chordoma of spine

- ✓ Aneurysmal bone cyst of spine
- ✓ Chondrosarcoma of the spine
- ✓ Giant cell tumors
- ✓ Multiple myeloma of the spine
- ✓ Multisegmental resection and reconstruction for tumors of the spine
- ✓ Spinal vascular malformations
- ✓ Spinal metastasis – diagnosis and staging
- ✓ Spinal metastasis – treatment options and results
- ✓ Management of residual spinal tumors

- Spine infection and inflammation
  - Understand biology and pathophysiology of inflammatory and infectious conditions of the spinal column.
  - Enable appropriate imaging and laboratory work- up to establish case based differential diagnosis.
  - 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.

    Topics:
    - ✓ Spinal tuberculosis – pathophysiology and clinical features
    - ✓ Spinal tuberculosis – diagnostic test and medical management
    - ✓ Spinal tuberculosis – surgical management
    - ✓ Spinal infections – differential diagnosis, treatment decision principles
    - ✓ Treatment of infection in spinal instrumentations
    - ✓ Antibiotic treatment of spinal wound infections
    - ✓ Antibiotic treatment of vertebra om, discitis and epidural abscess
    - ✓ Ankylosing spondylitis
    - ✓ Instability of occipito-atlantoaxial spine in rheumatoid arthritis
    - ✓ Surgical management of subaxial cervical spine in rheumatoid arthritis
    - ✓ DISH

- Adult spine deformity
  - Understand the ethiopathogenesis and natural history of adult spinal deformities of any origin.
  - Be aware of and understand the different classification systems in adult deformities.
  - Be updated on adult spinal deformity in terms of new understanding of the natural history and new treatment options.
  - Become familiar with the different imaging modalities which are used to make treatment-oriented decisions.
  - Understand in particular the biomechanics of the instrumented fixation of complex adult deformity correction and stabilization.
  - Recognise the paramount importance of balance in the adult spine and in particular, sagittal balance.
  - Learn to define precisely surgical indications based on objective evaluation and diagnostic algorithms.
  - Recognise the limitations of conservative treatment modalities.

Topics:
- ✓ Degenerative scoliosis
- ✓ Planning deformity correction technique
- ✓ Osteotomies of the spine for adult deformity correction
- ✓ Pelvic fixation options
- ✓ Interbody fusion options – TLIF, OLIF, ALIF, LLIF
- ✓ Scheuermann's and idiopathic kyphosis
- ✓ Ankylosing spondylitis
- ✓ Adult angular kyphosis
- ✓ Sagittal balance in L5-S1 spondylolisthesis
- ✓ Imaging in spondylolisthesis
- ✓ Spondylolisthesis fusion options

- Paediatric spine deformity
  - Understand pathogenesis and natural history of paediatric and adolescent deformities of any etiology.
  - Be updated on spinal cord anomalies and congenital deformities in paediatric patients.
  - Learn about specific imaging and biomechanics of spinal deformities.
  - Understand indications and principles of conservative treatment in paediatric spinal deformities.
  - Learn principles for surgical treatment and describe the different surgical approaches and strategies to correct paediatric deformities.

    Topics:
    - ✓ Idiopathic scoliosis
    - ✓ Early onset scoliosis
    - ✓ Secondary scoliosis
    - ✓ Congenital deformities
    - ✓ Spinal cord anomalies – spinal dysraphism
    - ✓ Biomechanic of deformed spine
    - ✓ Clinical assessment of deformities
    - ✓ Role of cast treatment and halo traction
    - ✓ Indication of brace treatment
    - ✓ Pre-operative assessment and surgical planning
    - ✓ Patient positioning and blood saving
    - ✓ Intraoperative neuromonitoring
    - ✓ Bone fusion in spinal deformity
    - ✓ Indication for anterior approach
    - ✓ Indication for posterior approach
    - ✓ Hybrid construct
    - ✓ Iliosacral fixation options

References:

1. Azar FM, Canale ST, Beaty JH. (2020) Campbell's Operative Orthopaedics (14th Edition) Elsevier Health
   Sciences.
2. Blom A, Warwick D, Whitehouse M.(2017), Apley & Solomon system of orthopaedics and trauma (10th
   Edition). CRC Press.
3. De Boer P, Buckley R, Hoppenfeld S. (2021) Surgical exposures in orthopaedics: the anatomicapproach (6th Edition). Lippincott Williams & Wilkins.
4. 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.

HAND & MICROSURGERY

PLACEMENT: HOSPITAL SELAYANG

COURSE CODE: ORT 751

CREDIT VALUE: 13

Theory and clinical

Candidates are required to obtain adequate knowledge:

- Brachial plexus injury
- Congenital abnormalities of the upper limb
- Dislocation and ligamentous injuries of the upper limb
- Fingertip and nailbed injuries
- Infections in the hand and upper limb
- Inflammatory conditions affecting the hand
- Peripheral nerve conditions in the upper limb
- Tendinopathies and tendon injuries
- Tumours of the hand
- Vascular conditions and injuries

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.

PAEDIATRIC ORTHPAEDIC SURGERY

PLACEMENT: HOSPITAL AL-SULTAN ABDULLAH / PUSAT PERUBATAN UNIVERSITI MALAYA

COURSE CODE: ORT 752

CREDIT VALUE: 13

Theory and clinical

Candidates are required to obtain adequate knowledge of:

- General Paediatric Orthopaedic Surgery
  - Pediatric skeletal trauma
  - Developmental variants and disorder
  - Infection of bone and joint
  - Neuromuscular disorder
  - Limb length discrepancy
  - Skeletal dysplasia
  - Congenital limb deficiency
  - Basic musculoskeletal tumors in children
  - Basic sports injury in children
  - Basic spine disorder in children
  - Congenital foot deformities
  - Pediatric Angular deformities
  - Pediatric Hip Conditions
  - Common traumatic elbow injuries

- Basic science in Paediatric Orthopaedic Surgery
  - Physis
  - Growth plate injury – physeal sparring vs sacrificing
  - Pediatric fracture healing and remodeling
  - Skeletal growth rate, prediction & estimation
  - Developmental variants, rotational profile and genu varum profile
  - Referred pain from the hip
  - Pathoanatomy of common condition
  - DDH, Clubfoot, Perthes, SCFE, Septic arthritis
  - Distraction osteogenesis
  - Principal of osteotomy correction on angular deformity
  - Monolateral and ring fixators in limb reconstruction
  - Implants in pediatric orthopedics
    - ✓ Plate, rush rod, flexible nail, expandable nail
    - ✓ CAPOS plate, 8-plate
  - Osteogenesis imperfecta and renal rickets
  - Patella stability

- Assessment and examination
  - Gait
    - ✓ Cadence, step length, stride length
    - ✓ Short leg, Trendelenburg, antalgic, waddling
    - ✓ Crouch, jump, calcaneus, equinous, pseudoequinous
  - Radiological of fracture and pediatric condition

- Physeal injury, greenstick, torus, cozen, elbow injuries
- non accidental, Perthes, SCFE, rickets, osteogenesis imperfecta
- Reimers migration index in CP
- CP- Tardieu angle, contracture vs spasticity
- Short stature
- Genu varus/valgus – stability test, lateral trust, correctibility
- Torticollis
- DDH – Ortolani, Barlow, shortening
- Spinal bifida
- Neurosegmental level, foot deformity, quadriceps function
- Hip at risk
- Nonaccidental injury
- LLD measurement, fixed abduction/adduction assessment
- Rickets
- Foot
- Cavus - block test
- Equinovarus – tibialis posterior vs tibialis anterior
- Flat foot assessment
- Flexible versus rigid
- Other paediatric condition: Ehler-Danlos syndrome, Klippel-Feil, Marfan's syndrome, Neurofibromatosis, neuromuscular disease

- Management of Primary Problem
  - Paediatric fracture
    - ✓ Epiphyseal fracture -Lateral condyle fracture
    - ✓ Management of growth plate injury
    - ✓ Metaphyseal fracture – supracondylar humerus
    - ✓ Shaft fracture
  - Tendon transfer and tenotomy
    - ✓ Total versus split transfer
  - Hip DDH: Chiari vs Salter
    - ✓ CP and spina bifida hip
    - ✓ Hinged abduction Perthes
  - Hip SCFE
    - ✓ Pin fixation method
    - ✓ Kiv open reduction
    - ✓ Residual deformity treatment
    - ✓ Safe surgical hip dislocation
  - Knee
    - ✓ patella instability / malalignment/reconstruction
    - ✓ Discoid meniscus
    - ✓ Osteochondral injury
    - ✓ Fixed flexion deformity in AMC
    - ✓ Haemophilia
    - ✓ Blount
    - ✓ Osteotomy, tibial plateau elevation, physeal bar resection, fixation

- Limb deficient
  - ✓ Tibia hemimelia
  - ✓ Fibula hemimelia
  - ✓ PFFD
- CPT
  - ✓ Resection, fixation technique
- Foot
  - ✓ CTEV
  - ✓ Vertical talus
  - ✓ Cavus foot – to correct hind foot or not
  - ✓ Recurrent deformity
  - ✓ AMC foot
- Metabolic bone disease
  - ✓ Benefit of Sofield-Millar operation +/- pamidronate
  - ✓ Guided growth
  - ✓ Intramedullary fixation versus load sparing device
- Skeletal dysplasia
  - ✓ Lengthening in short stature
  - ✓ Angular deformity correction
  - ✓ Coxa vara
- Problem in syndromic babies
- Polydactyly and syndactyly
- Hallux varus, curly toe, tarsal coalition

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.

ADVANCED MUSCULOSKELETAL TRAUMA &
LIMB LENGTHENING RECONSTRUCTION SURGERY

PLACEMENT: HOSPITAL AL-SULTAN ABDULLAH / HOSPITAL SG BULOH
COURSE CODE: ORT 761
CREDIT VALUE: 13

Theory and clinical

Candidates are required to obtain adequate knowledge of:

- Biology of bones and tissues
- Fracture pathology and healing
- Fracture non-union
- Bone grafting
- Distraction osteogenesis
- Vector traction
- Pelvis and acetabular surgery
  - Mechanism of pelvis and acetabular injuries
  - Classification of pelvis and acetabular fractures
  - Radiographic evaluation of pelvic and acetabular fractures
  - C clamp In unstable pelvic fractures
  - Stabilisation of pelvic ring injury using external fixator
  - Pelvic ring injuries
  - Pubic rami fractures
  - Acetabulum fracture
  - Mixed pelvis and acetabulum fracture
  - Sacral fracture
  - Spinopelvis dissociation

- Limb reconstructive surgery
  - Acute fracture fixation of tibia with Ilizarov external fixator or monorail
  - Acute fracture fixation of femur with Ilizarov external fixator or monorail
  - Bone transport for tibia or femur
  - Bone lengthening of the lower limb
  - Correction of angulation (COA) of long bones
  - Correction of deformity (COD) of long bones
  - Joint arthrodesis
  - Joint manipulation

Essential procedures

- LLRS
  - Periarticular fracture fixation with Ilizarov /hexapod external fixator
  - Joint arthrodesis with Ilizarov /hexapod external fixator
  - Angular deformities correction with ilizarov/hexapod external fixator
  - Acute correction of deformity of long bone using internal fixation
  - Limb. Lengthening with ilizarov/hexapod/monorail external fixator – include corticotomy for distraction osteogenesis and bone transport
  - Infected non-union fixation with ilizarov/hexapod/monorail external fixator
  - Joint contracture correction with ilizarov/hexapod external fixator

- Pelvis
    - Pelvis external fixator – iliac crest and supra acetabulum
    - Symphysis pubis plating
    - Anterior column plating
    - Posterior wall plating
    - Posterior column plating
    - Iliac crest plating
    - Percutaneous sacroiliac screw and anterior column screw

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).

ARTHROPLASTY SURGERY

PLACEMENT: HOSPITAL AL-SULTAN ABDULLAH / HOSPITAL CANSELOR TUANKU MUHRIZ

COURSE CODE: ORT 771

CREDIT VALUE: 13

Theory and clinical

Candidates are required to obtain adequate knowledge:

- Basic Sciences
  - Biomaterial
    - ✓ Types of Material
    - ✓ Mechanism of Material Failure
    - ✓ Material Properties
      - ➢ Metal & ceramic
      - ➢ UHMWPE
      - ➢ Bone substitute & allograft
      - ➢ PMMA or bone cement
  - Biomechanics
    - ✓ Hip Biomechanics
      - ➢ An understanding of the lever arms, muscles and body weight forces that produce the joint reaction force in both normal and abnormal hips
      - ➢ An understanding of the application of these principles to replacement arthroplasty
      - ➢ Knowledge of the biocompatibility and mechanical properties of materials in common use in total hip arthroplasty
    - ✓ Knee Biomechanics
      - ➢ The mechanics of the patello-femoral mechanism
      - ➢ Axis of Knee Joints
      - ➢ The medial and lateral weight-bearing joints and their inter-relationship
      - ➢ The cruciate and collateral ligaments and other ligamentous and muscular supports
      - ➢ Menisci and articular cartilage

- Pre-operative aspect
  - Indications for Joint Replacement
    - ✓ Pathology of diseases leading to joint replacement as final treatment
  - Surgical Planning
    - ✓ Patient selection & assessment
    - ✓ Counselling & consent
    - ✓ Templating & radiological assessment
    - ✓ Implant selection (primary, adjunct & revision)
    - ✓ Prophylaxis
    - ✓ Antibiotics
    - ✓ Venous thromboembolism

    - Theatre asepsis & procedure
        - ✓ Positioning
- Surgical Approaches
    - Hip
        - ✓ Posterior
        - ✓ Lateral
        - ✓ Anterolateral
        - ✓ Direct Anterior
    - Knee
        - ✓ Medial Parapatellar
        - ✓ Midvastus/Subvastus
        - ✓ Lateral Parapatellar

- Principles of joint replacement
    - Hip
        - ✓ Cup Placement
        - ✓ Stem Placement
        - ✓ Cemented / Hybrid / Uncemented
    - Knee
        - ✓ Bone cuts
        - ✓ Soft tissue balancing
        - ✓ Concept of alignment
        - ✓ Total / Unicompartmental

- Post-operative aspect
    - Complications
        - ✓ Intraoperative
        - ✓ Early, intermediate & late
        - ✓ Surgical Site infection
- Post-Operative care
    - Wound care
    - Rehabilitation

- Outcome of Joint Replacement
    - Scoring System
    - Oxford Knee Score
    - WOMAC Knee score
    - KOOS score
    - Harris Hip Score

- Assessment and management of failed arthroplasty
    - Prosthetic Joint Infection
    - Periprosthetic Fracture
    - Aseptic loosening

- Other topics
    - Conservative managements of osteoarthritis and practical value

        - ✓ SYSADOAs
        - ✓ Intraarticular Injections
    - Osteotomies in Adult reconstructive surgery
        - ✓ High Tibial Osteotomy:
        - ✓ Open wedge / Close Wedge
- Special situations
    - Inflammatory arthritis
    - Rheumatoid Arthritis / Gouty arthritis / Psoariatic Arthritis
    - Adult manifestation of DDH
    - Avascular necrosis

- Optional topics:
    - Navigation in arthroplasty
    - Robotic hip & knee arthroplasty
    - Tumor endoprosthesis

References:

1. Mark D. Miller MD, Stephen R. Thompson (2015), Miller's Review of Orthopaedics (7th Edition). Elsevier.
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.

ORTHOPAEDIC ONCOLOGY SURGERY

PLACEMENT: HOSPITAL AL-SULTAN ABDULLAH / PUSAT PERUBATAN UNIVERSITI MALAYA

COURSE CODE: ORT 781

CREDIT VALUE: 13

Theory and clinical

Candidates are required to obtain adequate knowledge:

1. Basic science - anatomy, pathology and biology of tumours

2. Classification of tumours:
   - Benign bone tumours
     - Giant cell tumour (GCT)
     - Osteochondroma
     - Osteoblastoma
     - Osteoid osteoma
     - Other primary bone tumor including cystic bone tumor
   - Benign soft tissue tumours
   - Malignant bone tumours
     - Osteosarcoma
     - Chondrosarcoma
     - Ewing sarcoma
     - Other primary bone tumour
   - Malignant soft tissue tumours
   - Neural tumours
   - Haematological malignancies
   - Tumor-like lesion

3. Staging of tumours and classification
   - Principles of staging
   - Investigations
   - Imaging (basis of imaging, indication, interpretation, complications, advances in use of imaging)
     - General plain radiograph
     - Ultrasound
     - CT Scans including 3D Reconstruction images
     - MRI
     - PET scans
     - Bone mineral densitometry
     - Nuclear medicine - bone scans, tagged scans
   - Tumour classification
   - Basic histopathological interpretation
     - Tumour margin
     - Tumour necrosis rate

- Specific staining
- Specific features

4. Principles of tumour management
   - Principle of biopsy
     - Types
     - Advantage and disadvantage
     - Technique
     - Common sites of biopsy
   - Principle of surgical margins

5. Metastasis
   - Systemic metastasis
   - Metastasis bone disease
   - Pathological fractures

6. Principle of treatment
   - Surgery in oncology
   - Limb salvage: principles of limb salvage, type of excision intralesional/ marginal/ wide/ radical
   - Limb reconstruction:
     - soft tissue - reconstruction ladder/ local flaps/free flaps
     - bone reconstruction - amputation/ autograft/ allograft/ processed autograft/ endoprosthesis/ endoprosthesis-allograft/ bone transport

7. Chemotherapy and radiotherapy in orthopaedics
   - Chemotherapy:
     - Principle of chemotherapy
     - Mode of action
     - Common agents
     - Common complications
     - Management of complications
   - Radiotherapy:
     - Principles of radiotherapy
     - Mode of action
     - Types
     - Common complications
   - Adjunct therapy

8. Palliative care and rehabilitations in orthopaedic oncology
   - Principle of palliative care
   - Basis of rehabilitation in Orthopaedic oncology
   - Counselling

References:

1. Ashley Blom (Editor), David Warwick (Editor), Michael Whitehouse (2017), Apley & Solomon system of orthopaedics and trauma (10th Edition). CRC Press.
2. Mark D. Miller MD, Stephen R. Thompson (2020), Miller's Review of Orthopaedics (8th Edition). Elsevier
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.

EXIT ESSENTIAL LEARNING ACTIVITY (ELA)

It is compulsory for trainee to complete all the exit ELA prior sitting for exit examination which are:

1. Plating of a distal radius
2. Release of A1 pulley/flexor tendon sheath under local anaesthesia
3. Hemiarthroplasty of the hip for neck of femur fractures
4. Hip adductor tenotomy for spasticity in children and adults
5. Below knee/trans-tibial amputation
6. Excision of small superficial soft tissue tumour
7. Internal fixation of intra-articular fractures of the tibial plateau or ankle
8. Diagnostic arthroscopy of the knee

EXIT EXAMINATION

COURSE CODE: ORT 782

At the end of semester 7, trainee will be assessed by SCOT if he/she is eligible to sit for Exit Examination. The trainees must start gathering portfolio evidence from the first day of training right up to the last EOY review. At all times it is the responsibility of the trainee to gather (and keep safely) the portfolio evidence as required by the curriculum.

Portfolio checklist includes:

i. Logbook records of surgical experience
   Procedures done independently at the appropriate level and in acceptable quanity
ii. Procedure Based Assessment (PBA)
   A minimum of 3 PBA assessment sheets per procedure per rotation, showing progression. Each rotation will have a minimum of 1 procedure to be assessed on.
iii. Mini Clinical Evaluation Exercise (Mini-CEX)
   At least 1 Mini-CEX per week in order to cover the spectrum of cases seen in the rotation.
iv. Case-based Discussion (CbD)
   A minimum of 2 CbD per rotation.
v. Learning Agreement
   A minimum of 11 learning agreements within a 4-year training period
vi. Exit Essential Learning Activities (ELA)
vii. Attendance at Continuing Professional Development (CPD) events
   Minimum of 1 CPD event per year. Minimum of 1 reflective note per session.
viii. Essential courses/ workshops
   With original certificates of completion/attendance with a reflective note per course/workshop
ix. Research Quality Improvement (RAQI)
   A written manuscript that is formatted for submission to a peer reviewed medical journal.
x. End of Year (EOY) reviews
   3 trainer reports and 3 supervisor reports per year.

For Exit examinations there will be 2 components:

I. Written:
   - Essay paper 1 & 2
   - Best Answer Questions
II. Clinical:
   - OSCE
   - Viva I - Principle of Orthopaedic Surgery
   - Viva II – Operative Orthopaedic
   - Modified long cases
   - Short cases

RULES, REGULATIONS & MONITORING

FEES

	Local	International
Fee	RM 5000.00	RM 22,500.00
Number of semester	8	8
Total	RM 40,000.00	RM 180,000.00

RULES & REGULATIONS

Jawatankuasa Tatatertib (Akademik) Pelajar is a non-partisan committee to handle disciplinary cases involving students.

Candidates found guilty under Regulation under Part II, General Discipline, 3(j), 3(k) and 5 under the Regulations on Educational Institutions (Students' Discipline) 1976, will be charged according to the University Disciplinary Board decisions. Under Laws of Malaysia Act 174 Educational Institutions (Discipline) Act 176.

Candidates indicted with the above charges will be given an F by the University Disciplinary Board.

Candidates found committing plagiarism in assignments/ projects/ dissertation will be subjected to action as stated in UiTM Plagiarism Policy 2012. However, cases that are beyond academic procedures are referred to the Student Affairs Unit (HEP) for appropriate action.

ANNUAL LEAVE

- Trainees' application for leave is subject to approval by the department. Leave is allowed up to a maximum of 2 weeks per semester (including maternity / sick leave).
- Only under special circumstances will leave exceeding this period is considered and will be determined on a case-by-case basis by the department.

GLOSSARY

CbD	-	Case-based Discussion
CME	-	Continuing Medical Education
CPD	-	Continuing Professional Development
ELA	-	Exit Essential Learning Activity
EOY	-	End of Year
IGS	-	Institute of Graduate Studies
MBBS	-	Bachelor of Medicine and Bachelor of Surgery
MD	-	Bachelor of Medicine
MedEx	-	Medical Specialist Pre-Entrance Examination
Mini-CEX	-	Mini Clinical Evaluation Exercise
MMC	-	Malaysian Medical Council
MOH	-	Ministry of Health
NOC	-	National Orthopaedic Curriculum
OSCE	-	Objective Structured Clinical Examination
PBA	-	Procedure Based Assessment
PRC	-	Postgraduate Research Committee
RAQI	-	Research, Audit, Quality Improvement
REC	-	Research Ethics Committee
SCOT	-	Subcommittee on Orthopaedic Training
SPOT	-	Selection of Postgraduate Orthopaedic Training
WE	-	Written Examination

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