



ZAMBIA COLLEGE OF MEDICINE & SURGERY
Advancing Specialist Care & Professional Growth

Specialty Training Programme
Curriculum & learning guide
for
ORTHOPAEDICS & TRAUMA

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GENERAL INTRODUCTION

This Curriculum and Learning Guide describes the work and competence-based professional training programme for the Specialty Training Programme (STP) in Orthopaedics and Trauma (ORT) in Zambia. The intended readership for the curriculum and guideline include the following: Trainees, host departments and managers of ORT healthcare services;

- ✦ STP ORT trainers, which includes all those involved in supervising, coordinating, assessing and delivering specialist education and training in Orthopaedics and Trauma;
- ✦ Academic, administrative and professional staff within Higher Education Institutions (HEIs), the Higher Education Authority (HEA), and the Zambia Qualifications Authority (ZAQA);
- ✦ Strategic partners involved in supporting Orthopaedics & Trauma care, and the training of healthcare practitioners in this field.

Zambia College of Medicine and Surgery (ZACOMS), advances professional training of medical specialists using the professional competence-based certification model beyond traditional university-based specialist training. It promotes specialist training as a vital pursuit for a successful professional medical career. The ZACOMS Specialty Training Program also promotes the increase in universal health coverage (UHC) by ensuring equitable access to cost-effective quality specialist care as close to the family as possible for people in Zambia at all levels of socioeconomic status and geographical location. The ZACOMS STP admits and certifies members and/or fellows as specialists in a medical and/or surgical specialty in any of the various specializations of medicine and surgery.

The Zambia College of Medicine and Surgery (ZACOMS) oversees the training of Orthopaedics and Trauma specialists working in conjunction with the Zambia Orthopaedics and Trauma Association (ZOTA). The programme is independent but is aligned with the curriculum and requirements of the College of Surgeons of East Central and Southern Africa (COSECSA).

Orthopaedics and Trauma encompasses the surgical care of the musculoskeletal system of the individual. It requires specialized knowledge and skills in order to manage orthopaedic conditions. The STP provides specialist training in Orthopaedics and Trauma. This is a relevant programme because of the critical shortage of Orthopaedic Surgeons. The STP ORT will equip trainees with core competencies reflecting the wide array of Orthopaedic and trauma subspecialties. This will mean for every trainee who completes this programme, the population they serve will have gained access to various surgical competencies. Furthermore, the graduate of this programme will offer support to the various surgical subspecialties, improving outcomes in the management of a broad spectrum of surgical pathology.

Vision

Our vision is to be innovative in providing a teaching and support structure that will empower every trainee to excel in Orthopaedics and Trauma knowledge, skills and research through internal and external collaboration.

Mission Statement

The mission of the STP ORT training in Zambia is to train specialists who shall endeavour to improve the health care services to all by providing safe, evidence-based, humanistic specialist care in the field of Orthopaedics and Trauma in an efficient and proficient manner to meet the needs of the Zambian community, and contribute to the field of Orthopaedics and Trauma in the region and globally.

Values:

- Professional excellence
- Integrity
- Sensitivity to reproductive health needs
- Interdisciplinary, inter institutional collaboration
- Continuous professional development
- Innovation
- Academic Excellence
- Self and peer review

RATIONALE FOR THE SPECIALTY TRAINING PROGRAMME IN ORTHOPAEDICS AND TRAUMA

The STP aims to train specialists in Orthopaedics and Trauma (ORT) in order to prepare them for specialist service in the healthcare system. The STP ORT aims to bridge the critical shortage of Orthopaedic Surgeons by advancing professional training of Surgeons using the competence-based certification model beyond traditional university-based specialist training. Simply put, this model works on the principle that every health facility equipped well enough to support an Orthopaedic and Trauma practice has the basic requirements to train an orthopaedic surgeon. The curriculum is informed by the training requirements of the Health Professions Council of Zambia (HPCZ) and the professional creed of the Zambia Orthopaedics and Trauma Association (ZOTA). The training programme encourages self-directed learning, life-long learning, and student-centred approaches while providing robust and structured guidance. The key outcomes are two-fold as stipulated in Outcomes 1 and 2.

Outcome 1: Apply, at mastery level, Biomedical Sciences, Behavioural & Sociology, and Scientific Principles to the Practice of Orthopaedics and Trauma

1. The graduate should be able to apply the Orthopaedics and Trauma practice biomedical scientific principles, methods and knowledge relating to anatomy, biochemistry, cell biology, genetics, immunology, microbiology, nutrition, pathology, pharmacology and physiology. The graduate should be able to:
 - a) Explain normal human structure and function relevant to Orthopaedics and Trauma.
 - b) Explain the scientific bases for common diseases and condition signs, symptoms and treatment relevant to Orthopaedics and Trauma.
 - c) Justify and explain the scientific bases of common investigations for diseases and conditions relevant to Orthopaedics and Trauma.
 - d) Demonstrate knowledge of drugs, drug actions, side effects, and interactions relevant to Orthopaedics and Trauma.

2. Apply Behavioural and Sociology Principles to the Practice of Orthopaedics and Trauma
 - a) Explain normal human behaviour relevant to Orthopaedics and Trauma.
 - b) Discuss psychological and social concepts of health, illness and disease relevant to Orthopaedics and Trauma.
 - c) Apply theoretical frameworks of psychology and sociology to explain the varied responses of individuals, groups and societies to Orthopaedics and Trauma.
 - d) Explain psychological and social factors that contribute to illness, the course of the disease and the success of Orthopaedics and Trauma interventions.

3. Apply Population Health to the Practice of Orthopaedics and Trauma
 - a) Discuss population health principles related to determinants of health, health inequalities, health risks and surveillance relevant to Orthopaedics and Trauma.
 - b) Discuss the principles underlying the development of health and health service policy, including issues related to health financing, and clinical guidelines relevant to Orthopaedics and Trauma.
 - c) Evaluate and apply basic principles of infectious and non-communicable disease control at community and hospital level relevant to Orthopaedics and Trauma.
 - d) Discuss and apply the principles of primary, secondary, and tertiary prevention of disease relevant to Orthopaedics and Trauma.

4. Apply Scientific Method and Approaches to Orthopaedics and Trauma Research.
 - a) Evaluate research outcomes of qualitative and quantitative studies in the medical and scientific literature relevant to Orthopaedics and Trauma.
 - b) Formulate research questions, study designs or experiments to address the research questions relevant to Orthopaedics and Trauma.
 - c) Discuss and apply appropriate research ethics to a research study relevant to Orthopaedics and Trauma.

Outcome 2. Competence, at mastery level, in Orthopaedics and Trauma Clinical Practice.

On successful completion of the work-based Orthopaedics and Trauma STP:

1. The trainees should have clinical and specialist expertise in Orthopaedics and Trauma, underpinned by broader knowledge, skills, experience and professional attributes necessary for independent practice;
2. The trainees should be able to undertake complex clinical roles, defining and choosing investigative and clinical options, and making key judgements about complex facts and clinical situations.
3. The trainees should contribute to the improvement of Orthopaedics and Trauma services in the context of the national health priorities, by means of outstanding scientific research and application of safe, high quality, cost effective, evidence based practice within the Zambian health system.
4. The trainees should possess the essential knowledge, skills, experience and attributes required for their role and should demonstrate:
 - ✦ A systematic understanding of clinical and scientific knowledge, and a critical awareness of current problems, future developments, research and innovation in Orthopaedics and Trauma practice, much of which is at, or informed by, the forefront of their professional practice in a healthcare environment;
 - ✦ Clinical and scientific practice that applies knowledge, skills and experience in a healthcare setting, places the patient and the public at the centre of care prioritizing patient safety and dignity and reflecting outstanding professional values and standards;
 - ✦ Clinical, scientific and professional practice that meets the professional standards defined by the Health Professions Council of Zambia (HPCZ);
 - ✦ Personal qualities that encompass self-management, self-awareness, acting with integrity and the ability to take responsibility for self-directed learning, reflection and action planning;
 - ✦ The ability to analyse and solve problems, define and choose investigative and scientific and/or clinical options, and make key judgments about complex facts in a range of situations;
 - ✦ The ability to deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and to communicate their conclusions clearly to specialist and non-specialist audiences including patients and the public;
 - ✦ The ability to be independent self-directed learners demonstrating originality in tackling and solving problems and acting autonomously in planning and implementing tasks at a professional level;
 - ✦ A comprehensive understanding of the strengths, weaknesses and opportunities for further development of Orthopaedics and Trauma as applicable to their own clinical practice, research, innovation and service

- development which either directly or indirectly leads to improvements in clinical outcomes and scientific practice;
- ✦ Conceptual understanding and advanced scholarship in their specialism that enables the graduate to critically evaluate current research and innovation methodologies and develop critiques of them and, where appropriate, propose new research questions and hypotheses;
 - ✦ Scientific and clinical leadership based on the continual advancement of their knowledge, skills and understanding through the independent learning required for continuing professional development.
5. Once registered as a specialist in Orthopaedics and Trauma, a range of career development options will be available including sub-specialist training. Alternatively, others may opt to undertake further career development in post, as specialist, through structured Continuing Professional Development (CPD), provided by Accredited CPD providers. Specialist orthopaedic surgeons who have successfully completed the STP OT will be eligible to compete for available Consultant positions in Orthopaedics and Trauma.

The outcomes of the STP ORT training are affiliated to the following curriculum outcome categories:

Category I: Scientific foundations

Goal 1: Understand the normal structure and function of the human body, at levels from molecules to cells to organs, to the whole organism.

Goal 2: Understand the major pathological processes and their biological alterations.

Goal 4: Understand how the major pathologic processes affect the organ systems.

Goal 5: Integrate basic science and epidemiological knowledge with clinical reasoning.

Goal 6: Understand the principles of scientific method and evidence-based medicine including critical thinking.

Category II: Clinical Skills

Goal 7: Obtain a sensitive, thorough medical history.

Goal 8: Perform a sensitive and accurate physical exam including mental state examination.

Goal 9: Establish and maintain appropriate therapeutic relationships with patients.

Category III: Communication and Interpersonal Skills

Goal 11: Develop the knowledge, skills, and attitudes needed for culturally-competent care.

Goal 12: Participate in discussion and decision-making with patients and families.

Goal 13: Work effectively with other providers in the health system.

Goal 14: Clearly communicate medical information in spoken and written form.

Category IV: Prevention

Goal 15: Develop knowledge, skills, and attitudes to practice the basic principles of prevention.

Goal 16: Practice personalized health planning for long-range goals.

Goal 17: Understand the planning for communities and populations.

Category V: Diagnosis

Goal 18: Elicit and correctly interpret symptoms and signs of Orthopaedics and Trauma conditions.

Goal 19: Diagnose and demonstrate basic understanding of common disease and conditions.

Goal 20: Appropriately use testing to help guide diagnostic and therapeutic decisions.

Goal 21: Demonstrate sound clinical reasoning.

Category VI: Treatment, Acute and Chronic.

Goal 22: Understand therapeutic options and participate in the multidisciplinary care of patients with complex problems.

Goal 23: Recognize acute life-threatening medical problems and initiate appropriate care

Goal 24: Acquire the knowledge and skills necessary to assist in the management and rehabilitation of chronic diseases.

Goal 25: Participate in care in a variety of settings; including knowledge about palliative care.

Category VII: Patient Safety

Goal 26: Identify and remove common sources of medical errors.

Goal 27: Understand and apply models of Quality Improvement.

Goal 28: Appreciate the challenges associated with reporting and disclosure.

Category VIII: Information Management

Goal 29: Use information and educational technology to facilitate research, education, and patient care.

Category IX: Ethics, Humanities, and the Law

Goal 30: Develop a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.

Goal 31: Develop a critical understanding of the multiple factors that affect the practice of medicine, public health and research.

Goal 32: Incorporate ethical principles in clinical practice and research.

Category X: Professionalism

Goal 33: Develop healthy self-care behaviours and coping skills.

Goal 34: Model service to patients and community.

Category XI: Leadership & Management

Goal 35: Develop interpersonal and communication skills that result in leadership in patient health service delivery and health human resource management.

ADMISSION CRITERIA TO THE SPECIALTY TRAINING PROGRAMME IN ORTHOPAEDICS AND TRAUMA

Applicants to the STP ORT must possess a primary qualification in medicine, that is, Bachelor of Medicine and Bachelor of Surgery (MB ChB) or equivalent, from a recognized university. Additionally, they must have completed internship and retain full registration and a practising licence issued by the Health Professions Council of Zambia. Other Ministry of Health policies and directives, for example, completion of rural posting, may apply.

CURRICULUM DESIGN/MODEL OF THE SPECIALTY TRAINING PROGRAMME IN ORTHOPAEDICS AND TRAUMA

The STP ORT Curriculum is a work-based professional competence-based training situated in an accredited training facility managed by specialists in Orthopaedics and Trauma with oversight by the Zambia College of Medicine and Surgery (ZACOMS) working through ZOTA. This curriculum is based on a process model of curriculum and is designed to be flexible and open ended rather than predetermined; maximizing the potential for growth and development.

During the STP ORT programme the specialty registrar is an integral member of the clinical work of the department in which they are training to gain the required clinical experience and competence. The STP ORT programme is a work based professional competence-based training leading to the award of the Certificate of Completion of Specialty Training (CCST) by the Zambia College of Medicine and Surgery (ZACOMS). Graduates are then eligible to apply to the Health Professions Council of Zambia to enter the Specialist Register in Orthopaedics and Trauma.

TEACHING METHODS IN THE SPECIALTY TRAINING PROGRAMME IN ORTHOPAEDICS AND TRAUMA

The STP ORT training is a work-based professional competence-based programme and should encompass diverse teaching and learning approaches that are appropriate for the target educational domain, i.e., cognitive (knowledge), psychomotor (practical), or affective (attitude) domain. The teaching methods may include, but not limited to, the following: expository lectures, tutorials, seminars, practical classes, skills laboratories, clinical demonstrations, clinical clerkships (bedside teaching, ward rounds, ambulatory

care teaching, operating theatre experience, post-mortem, and on-call duties), field and community-based learning, and ICT supported learning experiences.

The Health Professions Specialty Training Guidelines for Zambia and Zambia College of Medicine and Surgery Society Objectives and By-Laws provide detailed guidance to the trainee about the STP and ZACOMS, respectively.

SPECIALTY TRAINING PROGRAMME IN ORTHOPAEDICS AND TRAUMA CURRICULUM STRUCTURE AND MAP

Curriculum Map for the STP OT Programme

STP YEAR 1 ORT 1080	ZACOMS PT 1 ARCP	STP YEAR 2 ORT 2080	ARCP	STP YEAR 3 ORT 3080	STP YEAR 4 ORT 4080	ZACOMS CCST Exams
Applied Basic Sciences in Orthopaedics and Trauma (4 months)		Principles and Practice of General and Orthopaedics and Trauma/ Operative Surgery (4 months)		General Surgery (3 months)	National Orthopaedics and Trauma Rotations (4 months)	
Introduction to Principles and Practice of Orthopaedics and Trauma (4 months)		General Orthopaedics and Trauma Rotations (4 months)		Accident and Emergency Rotation (3 months)	General Orthopaedics and Trauma Rotation (4 months)	
Basic General Surgical Techniques and Practice (4 months)		Research Methods (4 months)		Orthopaedics and Trauma Rotation (3 months)	Leadership and management (4 months)	
Part 1: Generic Education & Training (1 year)		Part 2: Themed & Specialist Education & Training (3 years)				

N.B. The total number of years, in particular, the themed specialist education and training may vary between different specialties.

1. ARCP = Annual Review of Competence Progression

2. CCST = Certificate of Completion of Specialty Training Examination;
3. STP = Specialty Training Programme;
4. ZACOMS PT 1 = Zambia College of Medicine and Surgery Part 1 Examinations in Basic Sciences, Behavioural Sciences, Health Population Studies, and Professionalism & Ethics; ZACOMS CCST Examinations = Certificate of Completion of Specialist Training in Orthopaedics and Trauma Examinations

ASSESSMENT IN THE SPECIALTY TRAINING PROGRAMME IN ORTHOPAEDICS AND TRAUMA

Progression to the next level of training is NOT automatic and is dependent on the trainee satisfying all the competency requirements of each defined level as per this curriculum and learning guide. Progression is based on passing both clinical and written examinations. The assessment framework is designed to provide a coherent system of assessing both formative and summative assessment which are workplace based and in examination settings.

Each training site must ensure that they use valid, reliable and appropriate methods for assessing the knowledge, clinical skills and attitude domains. The continuous assessments and final annual assessments are weighted at 40% and 60% of the final mark of Annual Review of Competence Progression, respectively. Assessment methods may include, but are not limited to, the following: Log of experiences and procedures completed, case reports, portfolios, project reports, multiple choice questions, essay questions, short answer questions, modified essay questions, short and long cases, objective structured clinical examinations (OSCE), practical examinations, objective structured practical examinations (OSPE), Mini-clinical Examination (MiniCEX), and Viva Voce, etc.

It is emphasized that marks from theory examinations **may not** compensate for poor scores in the clinical examinations; Students **MUST** pass the clinical examinations in order to progress to the next stage of training or completion.

Assessment	Knowledge, Skill and Attitude Domain	Examining Body
Formative Workplace Based Assessments	Outcome 1 & 2	Training Site
Annual Review of Competence Progression	Outcome 1 & 2	Training Site in conjunction with ZACOMS
ZACOMS Part 1 Examination	Outcome 1	ZACOMS working through ZOTA

ZACOMS Certificate of Completion of Specialist Registration Examinations	Outcome 2	ZACOMS working through ZOTA
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A candidate shall be allowed a maximum of three attempts for ZACOMS Part 1 and/or Part 2 Examinations. Candidates must have submitted a completed log book to be eligible to attempt the ZACOMS Part 2 Examination.

For ease of tracking progress and planning for Orthopaedics and Trauma care, all STP ORT trainees will be registered with ZACOMS and ZOTA for the duration of their training and will be allocated a Health Professions Council of Zambia Specialty Registrar Index Number.

Grading Scheme

The STP ORT Curriculum and Guide are the basis for all specialty training which contextualize the standards of proficiency set down by the Zambia College of Medicine and Surgery (ZACOMS) in consultation with the Zambia Orthopaedics and Trauma Association (ZOTA) in a way that is accessible to the profession and the public. The Certificate of Completion of Specialist Training (CCST) is not graded. Separate assessments and examinations may be graded to show the level of achievement of the trainee in a particular course or assignment.

Assessment of Attainment of Competence in an Academic Subject

Status & Level	Description of Competence Features	% Range
Outright Fail	<ul style="list-style-type: none"> Has poor and inaccurate command of the subject vocabulary 	44.9% & Below
[D]	<ul style="list-style-type: none"> Has poor and inaccurate command of the concepts (knowledge, skills and attitudes) of the subject across a broad range of topics. 	
Bare Fail [D+]	<ul style="list-style-type: none"> Has the basics of subject vocabulary Has the basics of concepts (knowledge, skills and attitudes) of the subject across a broad range of topics Unable to transfer and apply knowledge, skills and attitudes of the subject in a range of situations. Unable to exercise independent judgement in a range of situations 	45 – 49.9

Clear Pass [C]	<ul style="list-style-type: none"> • Has sound command of subject vocabulary • Has sound command of concepts (knowledge, skills and attitudes) of the subject across a broad range of topics • Able to formulate responses and demonstrate skill and exhibit appropriate attitude in well-defined and abstract problems/professional settings across a broad range of topics of the subject 	50 – 64.9
Meritorious Pass [B]	<p>All of above in level 3 and:</p> <ul style="list-style-type: none"> • Able to transfer and apply knowledge, skills and attitudes and exercise significant independent judgement in a broad range of topics of the subject 	65 – 74.9
Distinction Pass [A]	<p>All of the above in level 4 and:</p> <ul style="list-style-type: none"> • Displays mastery of complex and specialised areas of knowledge, skills and attitudes in a broad range of topics of the subject. 	75% & Above

ORTHOPAEDICS AND TRAUMA HANDBOOK & CURRICULUM

The detailed STP Orthopaedics and Trauma Handbook and Curriculum is presented in full in the next section.

ORTHOPAEDICS AND TRAUMA HANDBOOK & CURRICULUM

Part 1 Examinations

The Part I Examination is designed to assess the basic principles of Orthopaedics and Trauma and a broad knowledge of surgery in general. It is designed to identify surgical trainees who can recognise and deal with the wide variety of problems that may be met by trainees. They should be able to take responsibility for emergency orthopaedic and general surgical admissions, deal independently with life threatening situations due to trauma or critical illness, and be able to diagnose and plan treatment of a wide variety of surgical complaints.

The Part I of ZACOMS STP ORT does not confer specialist status but signifies that the trainee is ready to pursue higher surgical training in Orthopaedics and Trauma or another surgical subspecialty. Higher surgical training in the chosen specialty is examined by

ZACOMS through the relevant affiliate professional association, which will confer specialist status.

Logbook

During the training period candidates must keep a logbook recording all of their training experience. The logbook should also contain details of all courses attended and the trainee and post assessment forms for the whole training period. This will serve as an accurate record of the trainees' competencies acquired during the training programme. It will therefore serve as an objective means of assessing a trainee's suitability to complete their training. This is an important aspect of the training because it is what helps track and confirm the competencies acquired by the trainee during the programme.

More detail on completing logbooks is provided in the logbook itself.

Before submission to the examination the Programme Director should check the logbook for completion. Before the start of the clinical and oral examinations, the logbook should be handed to the examination panel. Proof of attendance at an approved Basic Surgical Skills course, Basic Surgical Science course and Critical Care or Trauma Course should be brought to the oral examination. Candidates will not be allowed to sit for the examination if this is not done.

Part 2 Examinations

The Part 2 examination in Orthopaedics and Trauma leads to the specialist qualification in Orthopaedics and Trauma of the ZACOMS. This qualification is recognition that the candidate has reached the level of knowledge, understanding and practice of Orthopaedics and Trauma sufficient to practice independently at a consultant or specialist level. It should be recognised, however, that surgery is not a static art and fellows should continue to increase knowledge and skills by means of research, conferences, meetings and reading.

Logbook

During the training period candidates must keep a logbook recording all of their training experience. The logbook should also contain details of all courses attended and the trainee and post assessment forms for the whole training period. This will serve as an accurate record of the trainees' competencies acquired during the training programme. It will therefore serve as an objective means of assessing a trainee's suitability to complete their training. This is an important aspect of the training because it is what helps track and confirm the competencies acquired by the trainee during the programme.

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COURSE CONTENT AND EXAMINATIONS

1. Goals

The goal of the STP course in Orthopaedics is to produce a competent orthopaedic surgeon who is:

- Aware of the current concepts in quality care in Orthopaedics and musculoskeletal trauma and also of diagnosis, therapeutic, medical and surgical management of orthopaedic problems
- Able to offer initial primary management of acute orthopaedic and trauma emergencies
- Aware of the limitations and refer readily to major centres for more qualified care of cases which warrant such referral
- Aware of research methodology and be able to conduct research and publish the work done
- Able to effectively communicate with patients, their family members, and professional colleagues
- Able to exercise empathy and a caring attitude, and maintain high ethical standards
- Able to continue taking keen interest in continuing education irrespective of whether he/she is in teaching institution or in clinical practice
- Dynamic, available at all times and proactive in the management of trauma victims and orthopaedic emergencies

2. Objectives

At the end of STP ORT course, the resident should be adept in the following domains:

- Skill to take a proper history for musculoskeletal disorders
- Clinical examination of all musculoskeletal disorders
- Application of history & clinical findings in making an appropriate clinical diagnosis
- Interpretation of investigations
- Discussion of options of treatment and follow up rehabilitation for the diagnosis made
- Have an in-depth theoretical knowledge of the syllabus with emphasis on current concepts
- Learn basic skills in musculoskeletal surgery including training on bone models and on patients by assisting or performing under supervision or independently as required.
- Have basic knowledge of common disorders of the spine, PIVD, degenerative disorders of spine, trauma spine and infections of spine for diagnosis and evaluation of the common spine disorders
- Develop a familiarity to major topics under “Sports Medicine” to gain exposure to the basic surgery, master the pathophysiology of the conditions usually

encountered and develop a sound foundation to add new knowledge in the future

- Learn basic principles of Hand Surgery with emphasis on applied anatomy, understanding pathophysiology of common conditions, planning of treatment and post-operative protocols
- Develop understanding of principles of soft tissue coverage and learn basic techniques used in extremity surgery

3. Syllabus

3.1 Theory

General Orthopaedic Infections

- General Principles of Infection
- Osteomyelitis
- Infectious Arthritis
- Tuberculosis and Other Infections

Tumors

- General Principles of Tumors
- Benign Tumors of Bone
- Malignant Tumors of Bone
- Soft Tissue Tumors and Nonneoplastic Conditions Simulating Bone Tumors

Congenital Anomalies

- Congenital Anomalies of Lower Extremity
- Congenital and Developmental Anomalies of Hip and Pelvis
- Congenital Anomalies of Trunk and Upper Extremity

Peripheral Nerve Injuries

Diagnosis and management

Microsurgery

Basic principles and techniques

Imaging in Orthopaedics

Other Nontraumatic Disorders

- Osteochondrosis
- Rickets and osteomalacia
- Metabolic bone disease
- Cerebral Palsy
- Paralytic Disorders
- Neuromuscular Disorders

- Genetic disorders
- Osteonecrosis

Traumatology

Fractures and Dislocations

- ✦ General Principles of Fracture Treatment
- ✦ Fractures of Lower Extremity
- ✦ Fractures of Hip
- ✦ Fractures of Acetabulum and Pelvis
- ✦ Fractures of Shoulder, Arm, and Forearm
- ✦ Malunited Fractures
- ✦ Delayed Union and Non-union of Fractures
- ✦ Acute Dislocations
- ✦ Old Unreduced Dislocations
- ✦ Fractures, Dislocations and Ligamentous Injuries of the hand
- ✦ Fractures and Dislocations of Foot
- ✦ Fractures and Dislocations in Children

Regional Orthopaedics: Spine

- ✦ Spinal Anatomy and Surgical Approaches
- ✦ Fractures, Dislocations, And Fracture-Dislocations of Spine
- ✦ Arthrodesis of Spine
- ✦ Paediatric Cervical Spine
- ✦ Scoliosis and Kyphosis
- ✦ Lower Back Pain and Disorders of Intervertebral Discs
- ✦ Infections of Spine

Sports Medicine

- ✦ Ankle Injuries
- ✦ Knee Injuries
- ✦ Shoulder and Elbow Injuries
- ✦ Recurrent Dislocations

The Hand

- ✦ Basic Surgical Technique and Aftercare
- ✦ Acute Hand Injuries
- ✦ Flexor and Extensor Tendon Injuries
- ✦ Wrist Disorders
- ✦ Paralytic Hand
- ✦ Cerebral Palsy of the Hand
- ✦ Arthritic Hand
- ✦ Compartment Syndromes and Volkmann Contracture

- ✦ Dupuytren Contracture
- ✦ Carpal Tunnel, Ulnar Tunnel, and Stenosing Tenosynovitis
- ✦ Tumors and Tumorous Conditions of Hand
- ✦ Hand Infections
- ✦ Congenital Anomalies of Hand

The Foot and Ankle

- ✦ Surgical Techniques
- ✦ Disorders of Hallux
- ✦ Pes Planus
- ✦ Lesser Toe Abnormalities
- ✦ Rheumatoid Foot
- ✦ Diabetic Foot
- ✦ Neurogenic Disorders
- ✦ Disorders of Nails and Skin
- ✦ Disorders of Tendons and Fascia

Operative Orthopaedics

Surgical Techniques and Approaches

Arthrodesis

- Arthrodesis of Ankle, Knee and Hip
- Arthrodesis of Shoulder, Elbow and Wrist

Arthroplasty

- Arthroplasty of Ankle and Knee
- Arthroplasty of Hip
- Arthroplasty of Shoulder and Elbow

Amputations

- General Principles of Amputations
- Amputations about the Foot
- Amputations of Lower Extremity
- Amputations of Hip and Pelvis
- Amputations of Upper Extremity
- Amputations of Hand

Arthroscopy

- General Principles of Arthroscopy
- Arthroscopy of Lower Extremity
- Arthroscopy of Upper Extremity

3.2 Practical

- Closed Reduction of Fractures, Dislocations
- Mastering Plastering Techniques
- Debridement of Open Fractures
- External Fixator application
- Internal Fixation of minor fractures with K-wires
- Closed manipulative correction of congenital problems like CTEV & other skeletal deformities.
- Biopsies – FNAB, FNAC, Trocar needle, open
- Excision of benign lesions
- Tendon lengthening
- Incision and drainage, acute Osteomyelitis / Septic Arthritis
- Skull tongs application
- Tension band wiring
- Interfragmentary compression
- Plate Osteosynthesis of Forearm bones
- Carpal Tunnel Release
- Bone grafting
- Soft tissue releases
- Interlocking intramedullary Nailing of Tibia & Femur
- Humerus Plating
- Ankle Fracture Fixations
- Dynamic Hip Screw Fixation
- Hemiarthroplasty Hip
- Caudal epidural injections
- Facet Block
- Vertebroplasty
- Exposure of posterior spine
- Laminectomy
- Anterior and posterior instrumentation of spine
- Bone Skills Lab
 - Tension Band Wiring - Lag Screw
 - Interfragmentary Compression
 - Broad Plating
- Narrow Plating
- External Fixation
- Cancellous Screw Fixation
- Dynamic Hip Screw Fixation
- Dynamic Condylar Screw Fixation
- Tibia Intramedullary Interlocking Nailing
- Femur Intramedullary Interlocking Nailing
- Tibial Condyle Fixation
- Elbow fractures Fixation

- Ankle Fractures Fixation
- Pelvis – External Fixation
- Pubic Symphysis – ORIF
- Acetabulum Fracture Fixation
- MIPPO Tibia
- Hemiarthroplasty
- Spine - Posterior Instrumentation
- Spine – Anterior Instrumentation
- To clinically diagnose, assess, investigate and initially manage all surgical and medical emergencies
- To learn to assess ABC and perform CPR

To perform

- Endotracheal intubation
- Peripheral and Central intravenous cannulation
- Intercostal drainage tube insertion
- Peritoneal aspiration
- Splintage of the spine and limbs for fracture-dislocations
- To learn the use of certain emergency drugs – adrenaline, atropine, dopamine, Steroids, analgesics etc.

To learn to apply

- Glassgow Coma Scale (GCS)
- AO classification of fractures
- Gustillo Anderson grading of open fractures
- Mangled Extremity Severity Scoring
- To learn to communicate with patient’s attendants on death of patient
- To learn to handle confidentiality issues

4. Teaching Program

4.1. General Principles

Acquisition of practical competencies being the keystone of the STP ORT training which is skills oriented.

Learning in postgraduate program is essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

4.2. Teaching Sessions

- Bedside teaching rounds

- Journal club
- Seminar
- PG case discussion
- X – Ray discussion
- Ortho-radio meet
- Ortho-Pathology Meet

Grand Round session (held in hospital auditorium regarding various topics like CPC, guest lectures, student seminars, sessions on basic sciences, biostatistics, research methodology, teaching methodology, health economics, medical ethics and legal issues) to be scheduled at each training site.

4.3 Teaching Schedule

In addition to bedside teaching rounds, the department will have daily one-hour sessions of formal teaching. The suggested time distribution of each session for department's teaching schedule is as follows:

1. Journal club	Once a week
2. Seminar	Twice a week
3. STP ORT case discussion	Twice a week
4. Ortho-radio meet	Once a month
5. Ortho-Pathology Meet	Once a month
6. Central session	As per hospital schedule

Note:

- All sessions are supervised by faculty members. It is mandatory for all STP ORT trainees to attend the sessions except those posted in emergency.
- All the teaching sessions are assessed by the faculty members at the end of session and marks are given out of 10 and kept in the office for internal assessment.
- Attendance of the residents at various sessions has to be at least 75%.

5. Posting

The STP ORT student rotates through the clinical units in the department

6. Research Project Reports

6.1 Every trainee shall carry out work on an assigned research project under the guidance of a recognized orthopaedics trainer; the project shall be written and submitted in the form of a thesis.

6.2 Every candidate shall submit research project to the program director within the timeframe set by the curriculum.

6.3 The trainee will

- (i) Identify a relevant research question;
- (ii) Conduct a critical review of literature;
- (iii) Formulate a hypothesis;
- (iv) Determine the most suitable study design;
- (v) State the objectives of the study;
- (vi) Prepare a study protocol;
- (vii) Undertake a study according to the protocol;
- (viii) Analyse and interpret research data, and draw conclusions;
- (ix) write a research paper.

7. Assessment

All the STP ORT trainees are assessed daily for their academic activities and also periodically.

7.1. General Principles

- The assessment is valid, objective, and reliable.
- It covers cognitive, psychomotor and affective domains.
- Formative, continuing and summative (final) assessment is also conducted in theory as well as practical/clinical. In addition, thesis is also assessed separately.

7.2 Formative Assessment

The formative assessment is continuous as well as end-of-term. The former is to be based on the feedback from the senior residents and the consultants concerned. End-of-term assessment is held at the end of each semester. Formative assessment will not count towards pass/fail at the end of the program, but will provide feedback to the candidate.

7.3 Internal Assessment

The performance of the Postgraduate student during the training period should be monitored throughout the course and duly recorded in the log books as evidence of the ability and daily work of the student. Marks should be allotted out of 100 as followed.

Sr. No.	Items	Marks
1.	Personal Attributes	20
2.	Clinical Work	20
3.	Academic activities	20
4.	End of rotation theory examination	20
5.	End of rotation practical examination	20

1. Personal attributes:

Behavior and Emotional Stability: Dependable, disciplined, dedicated, stable in emergency situations, shows positive approach.

Motivation and Initiative: Takes on responsibility, innovative, enterprising, does not shirk duties or leave any work pending.

Honesty and Integrity: Truthful, admits mistakes, does not cook up information, has ethical conduct, exhibits good moral values, loyal to the institution.

Interpersonal Skills and Leadership Quality: Has compassionate attitude towards patients and attendants, gets on well with colleagues and paramedical staff, is respectful to seniors, has good communication skills.

2. Clinical Work:

- **Availability:** Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.
- **Diligence:** Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management.
- **Academic ability:** Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.
- **Clinical Performance:** Proficient in clinical presentations and case discussion during rounds and OPD work up. Preparing Documents of the case history/examination and progress notes in the file (daily notes, round discussion, investigations and management) Skill of performing bed side procedures and handling emergencies.

3. Academic Activity: Performance during presentation at Journal club/ Seminar/ Case discussion/Stat meeting and other academic sessions. Proficiency in skills as mentioned in job responsibilities.

4. End of rotation theory examination conducted at end of each session and end of year.

5. End of term practical/oral examinations after each year.

Marks for **personal attributes** and **clinical work** should be given annually by all the consultants under whom the resident was posted during the year. Average of the three years should be put as the final marks out of 20.

Marks for **academic activity** should be given by all the consultants who have attended the session presented by the resident.

The Internal assessment should be presented to the Board of examiners for due consideration at the time of Final Examinations.

7.4 Summative Assessment

- Ratio of marks in theory and practical will be equal.
- The pass percentage will be 50%.
- Candidate will have to pass theory and practical examinations separately.

A. Theory examination (Total = 400 marks)

	Title	Marks
Paper 1:	Basic Sciences and related Orthopaedics	100
Paper 2:	Principles & Practice of Orthopaedic diseases & Operative Orthopaedics	100
Paper 3:	Traumatology and its related aspects	100
Paper 4:	Recent Advances in Orthopaedics	100

B. Practical & Viva voce examination (Total = 400 marks)

Cases-		450 marks	
Long case	One-		150 marks
Short cases	Three- 50x3 =		150 marks
OSCE	10 Stations		150 marks

Oral/ Viva-		100 marks	
Pathology specimens & X-Rays			25 marks
Bones			25 marks
Implants & Instruments			25 marks

Orthosis & Prosthesis		25 marks
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8. Job responsibilities

- Evaluation of patients in emergency, completing the file work and their management including resuscitation, wound cleaning and splintage
- History taking and examination of patient admitted to ward, their diagnostic workup, follow up of investigations, making a diagnosis and a treatment plan
- Preparation of OT List
- Pre-operative planning
- Preparation of patients for surgery and post-operative care
- Assisting in operation theatre
- Daily rounds for evaluation of patients, ordering relevant investigations and following them up, dressing of patients and completing daily progress notes
- Preparation of discharge slip and advising the patient accordingly
- Work-up of patients in Out-patient department

GENERAL SURGICAL SKILLS

Basic Surgical Skills

- Safety in theatre
- Principles of maintaining sterility
- The principles of anastomosis
- Suture materials and needles
- The principles of debridement
- Diathermy principles and safety
- Plaster techniques

Principles of Surgery In General

- The principles of surgical care which are common to all surgical disciplines

Pre-Operative Care

- Surgical nutrition: Parenteral and oral
- Fluid and electrolyte therapy
- Blood transfusions and its hazards
- Infection and antimicrobial agents
- Diagnostic aids - imaging and clinical chemistry

Intra-Operative Care

- Aseptic and antiseptic techniques
- Hazards and precautions in operating theatres
- Electrical safety and hazards
- Radiation effects and hazards

- Perioperative management of surgical patients with medical conditions
- Perioperative management of the patient on steroid therapy

Normal Postoperative Care and Complications

- Convalescence: The metabolic response to trauma
- Hypovolaemic shock
- Cardiac arrest
- Acid-base metabolism
- Gram negative - bacterial endotoxic shock
- Respiratory support and mechanical ventilation
- Pulmonary aspiration
- Adult respiratory distress syndrome
- Deep vein thrombosis and pulmonary embolism
- Fat embolism
- Haemostatic disorders
- Postoperative acute renal failure
- Postoperative jaundice
- The recognition of cardiac arrhythmias and cardiac failure and its management
- Multiple organ failure
- Postoperative care of infants and children

INDICATIVE RESOURCES

Core books

- Apley's System of Orthopaedics & Fractures
- Campbell's Operative Orthopaedics
- Mercer's Orthopaedic Surgery
- Mc Rae – Clinical Examination
- Hamilton Bailey Demonstration of Clinical Signs & Symptoms
- Snell's Anatomy
- Pye's Surgical Handicraft
- Stewart's Manual

Reference books

- Rockwood & Green – Fractures in Adults
- Rockwood & Green – Fractures in Children
- Chapman Orthopaedic Surgery
- Turek's Textbook of Orthopaedics
- Hoppenfield – Surgical Exposures
- Mc Rae – Surgical Exposures
- Insall & Scott – Surgery of the Knee
- Miller & Cole Textbook of Arthroscopy
- Tachdjian Paediatric Orthopaedics

Journals

- Journal Bone & Joint Surgery – American
- Journal Bone & Joint Surgery – British
- Orthopaedic Clinics of North America
- Clinical Orthopaedics & Related Research
- Indian Journal of Orthopaedics
- Spine
- Hand Clinics
- Rheumatology Clinics
- Injury
- Journal of Orthopaedic Trauma
- Arthroscopy