VINUNIVERSITY

COLLEGE OF HEALTH SCIENCES

CURRICULUM FRAMEWORK

ORTHOPAEDIC SURGERY RESIDENCY PROGRAM

Program code: 62720725

Applicable from Academic Year 2024 - 2025

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VINUNIVERSITY

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I. GRADUATE ATTRIBUTES

The Orthopaedic Surgery Residency Program at VinUniversity-College of Health Sciences (VU-CHS) complies with the regulations and requirements of the Vietnamese government. Specifically, the program design is guided by the Ministry of Health (MOH) Framework (Endorsed in 2006 by MOH, Decision: 19/2006/QĐ-BYT). Moreover, the training program is designed to meet international standards so that residents who complete the training are able to deliver high quality services nationally and internationally. A fundamental component of residency training at VU-CHS is the concept of graded and increasing responsibility, which is embedded in any residency training program in the United States (US). The objectives of supervision in the context of graduate medical education are to ensure that patients receive safe and effective care while undergoing training, to build each resident's abilities, knowledge, and attitudes to become independent practitioners, and to lay the groundwork for future personal and professional development. The training programs at VU-CHS are dedicated to residents' learning and the achievement of competencies by:

- Being a competency-, pedagogy-, and evidence-based program[1]
- Training residents to be not only an expert in their field, but also an effective member of interprofessional teams that are responsive to the needs of patients, their families, and communities, and the overall health system
- Providing broad-based inpatient and outpatient experience in the surgical sciences, multidisciplinary team-based care, wellness training, and quality improvement skills[2]
- Applying longitudinal training/ continuity experiences across the program
- Assessing not only clinical knowledge and technical skills but also attitudes and values

The training program prioritizes values, aims, and principles of healthcare services in Vietnam, international competencies for learning and life, and a focus on community, local, national, and global health needs.

VinUni Foundational Graduate Attributes

Generic graduate attributes are a set of skills, attributes, and values that all learners should achieve regardless of discipline or field of study; these should be measurable and broad. The five Generic Graduate Attributes for VinUni, framed around the EXCEL Model, are listed as below:

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[1] Deborah J. DeWaay et al, Am J Med Sci 2016, Redesigning Medical Education in Internal Medicine: Adapting to the Changing Landscape of 21st Century Medical Practice

[2] Thomas S. Huddle et al, Acad Med. 2008, Internal Medicine Training in the 21st Century

- E: Empathy – Sense other people's emotions, understand others without judgement
- X: Exceptional Capability – Exceptional capabilities and competencies that are proven determinants of future success.
- C: Creativity – Perceive the world in new ways, make connections, generate solutions
- E: Entrepreneurial Mindset – Overcome challenges, be decisive, accept responsibility, be impactful for society.
- L: Leadership Spirit – Motivate and influence people to act toward achieving a common goal.

II. PROGRAM OVERVIEW

2.1. Program Description

Name of the program degree	Orthopaedic Surgery Residency Program
Program duration	5 years
Total credits	334,5 credits

2.2. Program Mission

The program aims to train residents to become doctors, who:

- Practice comprehensive Orthopaedic surgery, emphasizing excellence in clinical knowledge and judgment, technical skills, and evidence-based, high-value, compassionate, culturally competent care.
- Acquire training and preparation to be competitive for subspecialty training.
- Conduct clinical, patient safety, or quality improvement research.
- Educate patients and colleagues effectively.
- Work collaboratively and with collegiality in an interdisciplinary team, including competent team leadership.

2.3. Professional Competency Standards

Our curriculum will ensure that residents achieve competencies required by ACGME-I in 6 domains, which are further subdivided into 43 standards, which are indicated below:

Domains	Standards
1. Patient Care Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Residents must demonstrate competence in:	1.1. The pre-admission, hospital, operative, and follow-up care (including rehabilitation) of patients. 1.2. Gathering essential and accurate information about their patients. 1.3. Making informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgment. 1.4. Developing and carrying out patient management plans. 1.5. Using information technology to support patient care decisions and patient education. 1.6. Performing all medical and invasive procedures essential for the practice of Orthopaedic surgery. 1.7. Providing health care services aimed at preventing health problems or maintaining health. 1.8. Using investigatory and analytic thinking approach to clinical situations. 1.9. Applying the basic and clinically supportive sciences appropriate to Orthopaedic surgery.
2. Medical Knowledge Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents must demonstrate proficiency in knowledge of:	2.1. Anatomy and physiology of the musculoskeletal system. 2.2. Pathology of the musculoskeletal system, to include correlative pathology (gross and microscopic pathology related to clinical and roentgenographic findings). 2.3. Biomechanic principles, terminology, and applications in Orthopaedics. 2.4. The appropriate use and interpretation of radiographic and other imaging techniques. 2.5. Orthopaedic oncology.

Domains	Standards
	2.6. Rehabilitation of neurologic injury and disease. 2.7. Spinal cord injury rehabilitation. 2.8. Orthotics and prosthetics. 2.9. Cartilage, bone, and tendon reparative processes. 2.10. Bone metabolism.
3. Practice-based Learning and Improvement Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. Residents are expected to develop skills and habits to be able to meet the following goals:	3.1. Identify strengths, deficiencies, and limits in one's knowledge and expertise. 3.2. Set learning and improvement goals. 3.3. Identify and perform appropriate learning activities. 3.4. Systematically analyze practice using quality improvement methods and implement changes with the goal of practice improvement. 3.5. Incorporate formative evaluation feedback into daily practice. 3.6. Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems. 3.7. Use information technology to optimize learning. 3.8. Participate in the education of patients, families, students, residents, and other health professionals.
4. Interpersonal and Communication Skills Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients and their families, and other health professionals. Residents must:	4.1. Communicate effectively with patients and their families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds. 4.2. Communicate effectively with physicians, other health professionals, and health-related agencies. 4.3. Work effectively as a member or leader of a health care team or other professional group. 4.4. Act in a consultative role to other physicians and health professionals. 4.5. Maintain comprehensive, timely, and legible medical records.

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Domains	Standards
5. Professionalism Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents must demonstrate:	5.1. Compassion, integrity, and respect for others. 5.2. Responsiveness to patient's needs that supersedes self-interest. 5.3. Respect for patient privacy and autonomy. 5.4. Accountability to patients, society, and the profession. 5.5. Sensitivity and responsiveness to a diverse patient population, including diversity in gender, age, culture, race, religion, disabilities, and sexual orientation;
6. Systems-based Practice Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents must:	6.1. Work effectively in various health care delivery settings and systems relevant to their clinical specialty. 6.2. Coordinate patient care within the health care system relevant to their clinical specialty. 6.3. Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care, as appropriate. 6.4. Advocate for quality patient care and optimal patient care systems. 6.5. Work in inter-professional teams to enhance patient safety and improve patient care quality. 6.6. Participate in identifying system errors and implementing potential systems solutions.

III. CURRICULUM STRUCTURE

3.1. Curriculum Composition

The Orthopaedic Surgery Residency Program is to be completed within five years on a full-time basis. The curriculum consists of 334,5 credits.

MOH (2006) requires a minimum of 150 educational credits for all residency training programs, regardless of the specialty. VU-CHS Orthopaedic Surgery Residency Program fulfills this requirement in the following way:

No	Area of Study	Number of Credits	Credit Distribution (%)
1	Compulsory Courses by MOH	17	5,08%
2	Supporting Courses	17,5	5,23%
3	Clinical Rotations	290	86,70%
4	Thesis	10	2,99%
Total		**334,5**	**100%**

3.2. Courses and Credit Distribution by Courses

Compulsory Courses by MOH ***17 credits (17 theory, 0 practice)***

No	Subjects/ Education Units	Course code	Credits	Distribution	
				Theory	Practice
1	Marxism-Leninism Philosophy (Philosophy Science and Society)	HASS1010	3	3	0
2	Research Methods and Evidence-Based Medicine	CCSC6142	2	2	0
3	Medical English	ENGL6011	10	10	0
4	Medical Pedagogy	PEDA6011	2	2	0

Supporting Courses ***17,5 credits (4,5 theory, 13 practice)***

No	Subjects/Education Units	Course code	Credits	Distribution	
				Theory	Practice
5	Orthopaedic Simulation Training	ORTH6230	13	3	10
6	Data Science	ORTH6240	1	1	0
7	Core Clinical Skills	CCSC6160	3,5	0,5	3

Clinical Rotations *290 credits (58 theory, 232 practice)*

No	Subjects/Rotation Blocks	Course code	Credits	Distribution	
				Theory	Practice
8	General Surgery (Abdominal Surgery)	ORTH6010	5	1	4
9	General Surgery (Thoracic Surgery)	ORTH6250	2,5	0,5	2
10	General Surgery (Neurosurgery)	ORTH6260	2,5	0,5	2
11	Emergency Medicine	ORTH6020	2,5	0,5	2
12	Radiology	ORTH6030	2,5	0,5	2
13	Rheumatology	ORTH6040	5	1	4
14	Reconstructive Microsurgery	ORTH6050	5	1	4
15	Anesthesia	ORTH6060	2,5	0,5	2
16	Intensive Care Medicine	ORTH6070	2,5	0,5	2
17	Surgical Intensive Care Medicine	ORTH6080	5	1	4
18	Orthopaedic Rehabilitation	ORTH6090	5	1	4
19	Vascular Surgery	ORTH6100	5	1	4
20	3D Technology in Orthopaedics	ORTH6110	5	1	4
21	Motion Analysis	ORTH6120	5	1	4
22	Orthopaedic Trauma 1	ORTH6131	10	2	8
23	Orthopaedic Trauma 2	ORTH6132	17,5	3,5	14
24	Orthopaedic Trauma 3	ORTH6133	12,5	2,5	10
25	Adult Reconstructive Orthopaedic Surgery 1	ORTH6142	10	2	8
26	Adult Reconstructive Orthopaedic Surgery 2	ORTH6144	10	2	8
27	Adult Reconstructive Orthopaedic Surgery 3	ORTH6145	10	2	8
28	Sports Medicine 1	ORTH6152	10	2	8
29	Sports Medicine 2	ORTH6154	10	2	8
30	Sports Medicine 3	ORTH6155	10	2	8

No	Subjects/Rotation Blocks	Course code	Credits	Distribution	
				Theory	Practice
31	Musculoskeletal Oncology Surgery 1	ORTH6163	10	2	8
32	Musculoskeletal Oncology Surgery 2	ORTH6164	10	2	8
33	Musculoskeletal Oncology Surgery 3	ORTH6165	10	2	8
34	Spine Surgery 1	ORTH6173	10	2	8
35	Spine Surgery 2	ORTH6174	10	2	8
36	Spine Surgery 3	ORTH6175	10	2	8
37	Hand Surgery 1	ORTH6183	12,5	2,5	10
38	Hand Surgery 2	ORTH6185	10	2	8
39	Pediatric Orthopaedics 1	ORTH6193	12,5	2,5	10
40	Pediatric Orthopaedics 2	ORTH6195	10	2	8
41	Elective 1 (Musculoskeletal Oncology Surgery/ Spine Surgery/ Hand Surgery/ Pediatric Orthopaedics)	ORTH6204	10	2	8
42	Elective 2 (Musculoskeletal Oncology Surgery/Spine Surgery/Hand Surgery/ Pediatric Orthopaedics/ Adult Reconstructive Orthopaedic Surgery/ Sports Medicine)	ORTH6215	10	2	8
43	Elective 3 (Musculoskeletal Oncology Surgery/ Spine Surgery/ Hand Surgery/ Pediatric Orthopaedics/ Adult Reconstructive Orthopaedic Surgery/ Sports Medicine)	ORTH6225	10	2	8

Thesis *10 credits (0 theory, 10 practice)*

No	Subjects/Education Units	Course code	Total credits	Distribution	
				Theory	Practice
44	Thesis	ORTH6890	10	0	10

3.3. Curriculum Planner

There will be 8 residents per class. Seven core rotations include: Orthopaedic Trauma, Musculoskeletal Oncology Surgery, Spine Surgery, Hand Surgery, Pediatric Orthopaedics, Adult Reconstructive Orthopaedic Surgery, and Sports Medicine.

PGY4 and PGY5 residents will be layered on top of senior residents on most rotations. This is to provide direct supervision of intern activities with respect to patient care and to provide opportunities for these residents to begin to have clinical and teaching responsibilities.

Each resident has 4 weeks of vacation per year. These are broken into 1- and 2-week blocks and spaced throughout the year.

A total of 24 weeks (8 in PGY4 and 16 in PGY5) of elective time will be allowed. Electives must take place at the teaching hospitals or be used for international rotations. Residents will have the opportunity to get further training within specific areas of their interest within the broad field of Orthopaedic surgery. Therefore, all electives must be personally approved by the program director.

Residents' clinical education includes experience in pre-operative evaluation and decision-making, intra-operative treatment, and immediate and long-term post-operative care of both inpatients and outpatients.

Each resident will be responsible for participating in patient care in the outpatient clinic associated with their specific rotation for at least two half days per week. This only applies to appropriate rotations.

Residents will be required to attend a weekly didactic session, weekly case conferences and a monthly journal club. These conferences will be held at a central location. All residents are mandated to attend and thus cannot be given clinical responsibilities during this time.

PGY2 and PGY3 residents have 2-week research rotations each year to meet the research requirements. They will use this time to research and write their thesis.

Curriculum Year Planner (from Cohort 2024 - 2029)

Year	Course	Weeks
PGY1	Core Clinical Skills	5
	General Surgery (Abdominal Surgery)	4
	General Surgery (Thoracic Surgery)	2
	General Surgery (Neurosurgery)	2
	Emergency Medicine	2
	Radiology	2
	Anesthesia	2
	Intensive Care Medicine	2
	Surgical Intensive Care Medicine	4
	Rheumatology	4
	Reconstructive Microsurgery	4
	Orthopaedic Rehabilitation	4
	Vascular Surgery	4
	Orthopaedic Trauma 1	8
	Vacation	4
PGY2	Thesis	2
	Spine Surgery 1	8
	Musculoskeletal Oncology Surgery 1	8
	Adult Reconstructive Orthopaedic Surgery 1	8
	Sports Medicine 1	8
	Orthopaedic Trauma 2	14
	Vacation	4
PGY3	Hand Surgery 1	10
	Spine Surgery 2	8
	Musculoskeletal Oncology Surgery 2	8
	Pediatric Orthopaedics 1	10
	Orthopaedic Trauma 3	10
	Thesis	2
	Vacation	4
PGY4	Adult Reconstructive Orthopaedic Surgery 2	8
	Sports Medicine 2	8
	Spine Surgery 3	8
	Musculoskeletal Oncology Surgery 3	8
	3D Technology in Orthopaedics	4

	Motion Analysis	4
	Elective 1 (Musculoskeletal Oncology Surgery/Spine Surgery/ Hand Surgery/Pediatric Orthopaedics)	8
	Vacation	4
PGY5	Adult Reconstructive Orthopaedic Surgery 3	8
	Sports Medicine 3	8
	Elective 2 (Musculoskeletal Oncology Surgery/Spine Surgery/Hand Surgery/Pediatric Orthopaedics/Adult Reconstructive Orthopaedic Surgery/Sports Medicine)	8
	Elective 3 (Musculoskeletal Oncology Surgery/Spine Surgery/Hand Surgery/Pediatric Orthopaedics/Adult Reconstructive Orthopaedic Surgery/Sports Medicine)	8
	Pediatric Orthopaedics 2	8
	Hand Surgery 2	8
	Vacation	4

3.4. Brief Course Descriptions

Compulsory Courses

Marxism-Leninism Philosophy (Philosophy Science and Society) (HASS1010, 3 credits)

Philosophy Science and Society is one of four courses in the General Education Program forming the ideology/national education component required for the higher education curriculum as directed by the Ministry of Education & Training, Socialist Republic of Vietnam. These four courses are designed to achieve the primary objective of helping residents understand the core values of both country and university through objective and critical academic lenses in a global context. Specifically, it will help residents achieve VinUni's learning outcomes related to their qualities, abilities, critical thinking, national pride, and global awareness as outlined in the Competency Framework of VinUni learners.

Medical English (ENGL6011, 10 credits)

The Medical English course meets the Vietnam Ministry of Health's requirements for graduate medical education. Tailored for Graduate Medical Education (GME) residents, this course offers an immersive learning experience combining in-person classes with guided self-study. Designed to enhance residents' English language proficiency in medical contexts, the course focuses on refining clinical communication skills, fostering intercultural competence, and honing academic literacies essential for professional growth. By the course's conclusion,

participants can expect to demonstrate improved English language fluency and confidence in communicating effectively with patients and healthcare professionals in diverse medical settings.

Medical Pedagogy (PEDA6011, 2 credits)

The overriding goal of this course is for residents to develop the knowledge, attitudes, and skills needed to effectively understand and integrate core concepts in medical education into their work as physicians. By offering opportunities for residents to hone their skills in areas such as clinical reasoning, giving feedback, and assessing junior trainees and learners, we aim to strengthen the physician workforce and promote the delivery of high-quality health care in Vietnam.

This course consists of two parts. Part 1 will consist of 5 workshops delivered during the Core Clinical Skills Course. Part 2 will consist of 3 workshops delivered in the following years. In both Parts 1 and 2, residents of all programs will join the sessions together. This course uses multiple teaching modalities including, but not limited to, didactic lectures, facilitated small-group discussion, case studies, role play, and simulation training.

Research Methods and Evidence-Based Medicine (CCSC6142, 2 credits)

This course provides an overview of the research process, research methods, and EBM (Evidence-Based Medicine). Specific topics covered in this course include an introduction to public health, study design, measures of disease, formulation of research questions using the PICO (patient/population, intervention, comparison/control, outcomes) format, and EBM. Learners will learn to apply research methods and EBM into patient care scenarios as well as into scholarships.

Supporting Courses

Core Clinical Skills (CCSC6160, 3.5 credits)

Core Clinical Skills Course focuses on common topics of pharmacotherapy which are essential for all residents regardless of their specialty, communication skills and simulation training and clinical procedural skills.

Pharmacotherapy reinforces reviewing of antibiotic classes, PK/PD of antibiotics and antimicrobial stewardship aim to:

- Understand the pharmacokinetic and pharmacodynamic principles for the most common antimicrobials in hospital settings

- Optimize the antimicrobial dosing based on Pharmacokinetic and Pharmacodynamic Principles
- Review the current challenge of antibiotic resistance
- Outline components of an effective stewardship program
- Understand the role of prescribers in antibiotic stewardship program

Communication skills reinforce core principles focused on professionalism, interpersonal and communication skills, and effective patient care. The residents will practice in detail scenarios such as breaking bad news, medical errors and disclosure, interprofessional communication and obtaining patient consent. These scenarios will help residents recognize the key role of communication in patient care and interprofessional collaboration, demonstrate effective communication in a variety of settings including obtaining patient consent, medical error disclosure, breaking bad news, and end of life care planning and describe medical professionalism and the fundamental principles and professional responsibilities.

The Simulation Training and Clinical Procedural Skills sessions utilize a variety of teaching pedagogies to develop practical skills required for all residents. The curriculum includes a combination of didactic lectures, small-group learning, and simulation activities that are primarily conducted at the VinUniversity Simulation Center. Core content covered in this course includes Basic Life Support (BLS), Advanced Cardiovascular Life Support (ACLS), and Advanced Trauma Life Support (ATLS) training as well as communication skills training, procedural skills training, and mock code simulations. These sessions aim to:

- Attain certification in BLS, ACLS and ATLS.
- Practice advanced life support skills in clinical scenarios in a simulated setting.
- Understand the indications, contraindications, potential complications, anatomic considerations, required equipment, and expected outcomes for procedures that are commonly performed in the clinical setting.
- Develop proper and safe basic techniques for procedures that are commonly performed in the clinical setting to facilitate future deliberate practice in the simulation and clinical setting.

Orthopaedic Simulation Training (ORTH6230, 13 credits)

The Orthopaedic Simulation Training course is designed to provide residents with hands-on experience and to improve their skills in various surgical procedures. The course may focus on:

- Bone Fixation: Training in bone fixation involves learning the techniques for stabilizing fractures using different fixation methods, which may include plates, screws, and nails.
- Arthroscopy Simulation: Arthroscopy simulation allows residents to practice minimally invasive surgery techniques used to diagnose and treat joint problems. This training includes navigating arthroscopic equipment within a joint, recognizing pathology, and performing therapeutic procedures.
- Arthroplasty Simulation: In arthroplasty simulation, residents learn the principles and techniques of joint replacement surgery. This includes preoperative planning, bone preparation, implant positioning, and postoperative management.

Data Science (ORTH6240, 1 credits)

The course is designed for Orthopaedic residents to equip them with the skills to analyze and interpret complex clinical data. The aim is to enhance the residents' ability to make data-driven decisions, improve patient outcomes, and conduct research. It may cover:

- Fundamentals of Data Science: Introduction to basic concepts of data science, including statistics, probability, and data visualization.
- Clinical Data Management: Techniques for collecting, cleaning, and managing datasets specific to Orthopaedic care.
- Machine Learning and Predictive Analytics: Application of machine learning algorithms to predict outcomes and trends in Orthopaedic surgery.
- Research Methodology: Training in designing studies, hypothesis testing, and scientific writing to contribute to evidence-based practice.

Clinical Rotations

Emergency Medicine (ORTH6020, 2,5 credits) – PGY1

Emergency medicine involves the evaluation and care of acute illness and injury requiring intervention within a limited time span. Orthopaedic surgeons should be able to manage both common medical and surgical emergency conditions and provide consultation and management for a variety of acute serious illnesses.

The Emergency Medicine rotation will provide the first-year Orthopaedic residents with an opportunity to evaluate and manage patients with common acute physical and mental illnesses within a finite time span. Training will emphasize the rapid gathering of a pertinent history, a focused physical exam, and the triage of serious versus minor illnesses. Residents should become familiar with the approach to the acutely ill unstable patient and the appropriate social

and medical disposition of patients. Finally, residents will become skilled in the performance of procedures necessary to manage conditions commonly seen in the Emergency Department.

Intensive Care Medicine (ORTH6070, 2,5 credits) – PGY1

Intensive care medicine encompasses the diagnosis and treatment of a wide range of clinical problems representing the extreme of human disease. Critically ill patients require intensive care provided by a coordinated team including the critical care physicians, operating/attending surgeons, subspecialists, and allied health professional staff. Most often, these patients are primarily managed by a physician trained in intensive care. However, in some settings, the critically ill trauma or surgical patient must be managed by a surgeon. Therefore, surgeons must have command of a broad range of conditions common among critically ill patients and must be familiar with the technologic procedures and devices used in the intensive care setting. The care of critically ill patients also raises many complicated ethical and social issues, and the surgeon must be competent in such areas as end-of-life decisions, advance directives, estimating prognosis, and the counseling of patients and their families.

Surgical Intensive Care Medicine (ORTH6080, 5 credits) – PGY1

In addition to the intensive care knowledge and skills gained during the ICU rotation, residents will spend dedicated time in the Surgical Intensive Care Unit. During this rotation they will learn the advanced knowledge and skills necessary to specifically manage critically ill trauma and complex post-operative patients such as cardiothoracic, vascular, and general surgery patients.

Radiology (ORTH6030, 2,5 credits) – PGY1

MSK (Musculoskeletal) radiology provides immense help to the Orthopaedic surgeons in disease diagnosis as well as treatment in the wide range of conditions right from infective and inflammatory arthritis, trauma (including sports injuries), bone tumors, and metabolic bone diseases. The rotation helps the residents to acquire basic skills in radiographic image interpretation; knowledge of choice of "best test" for cross-sectional imaging (US, CT, or MRI) and familiarity with some image-guided biopsy procedures.

Anesthesia (ORTH6060, 2,5 credits) – PGY1

In the operating theatre, anesthesiologists and surgeons must work closely together to provide the absolute best care for the patient. Furthermore, airway management is a critical set of skills that all surgeons must possess. During this rotation, residents will work in the operating theatre under the direct supervision of the attending anesthesiologist. They will learn all aspects of non-surgical airway management from direct laryngoscopy to fiberoptic intubation, gain a

basic knowledge of inhalational, regional, and intravenous anesthesia, and can perform arterial and central venous line placement.

General surgery

- ***Abdominal Surgery (ORTH6010, 5 credits) – PGY1***
- ***Thoracic Surgery (ORTH6250, 2.5 credits) – PGY1***
- ***Neurosurgery (ORTH6260, 2.5 credits) – PGY1***

Surgeons provide continuing care for patients with a myriad of surgical and psychosocial problems. During many patient encounters, the focus is on the diagnosis and treatment of illness. This endeavor involves consultation with a variety of specialties and review of the risks and benefits of surgical intervention. As such, it is important for residents to be exposed to common surgical disease processes as well as recognize the unusual diseases or common disease presenting in an unusual fashion. The General Surgery rotation will provide the first-year Orthopaedic residents with an opportunity to learn normal and abnormal anatomy, gain basic procedural skills, and facilitate an understanding of commonly encountered issues in pre- and postoperative care.

Vascular Surgery (ORTH6100, 5 credits) – PGY1

The rotation will provide the resident with an understanding of vascular anatomy and physiology as well as the opportunity to diagnose and manage conditions affecting much of the body's circulatory system. Orthopaedic residents will have the opportunity to evaluate and manage patients with both common and complex vascular disorders in both inpatient and outpatient settings. The goal is to familiarize them with basic mechanisms, clinical manifestations, diagnostic strategies, and management of vascular disease as well as disease prevalence and prevention. Depth of exposure should be such that they can develop competency in the prevention of vascular disease, knowledge of indications for procedures, management of common disease, including basic surgical techniques, management of the acutely ill patient, and appropriate indications for referral.

Rheumatology (ORTH6040, 5 credits) – PGY1

The rotation will provide the Orthopaedic resident with exposure to common conditions, such as osteoarthritis, osteoporosis, and rheumatoid disease as well as rare and diagnostically elusive conditions, such as vasculitis, spondyloarthropathies, and inflammatory muscle disease. As these conditions are not always encountered during training, the goal is to give the resident an understanding of the pathophysiology and resulting systemic manifestations of connective tissue disorders, with a focus on the following issues: clinical patterns of disease,

cost-effective diagnostic evaluation, early identification and treatment of disease to prevent disability and improve quality of life, proficiency in the use of ant-inflammatory, immunosuppressive and cytotoxic drugs; and enhancement of procedural skills, such as arthrocentesis and injection.

Reconstructive Microsurgery (ORTH6250, 5 credits) – PGY1

Microsurgery is a specialized technique utilized in many areas of modern surgery with wide clinical applications. It involves manipulation of very small caliber structures, requiring precise surgical technique and refined operative principles. Among Orthopaedic surgeons, microsurgery is often used when performing nerve grafting and repair, free tissue transfers, and replantation of digits or extremities. Although typically utilized by hand surgeons, adeptness in microsurgery is of use to the Orthopaedic resident. The exposure to microsurgery that residents receive during their residency training may influence their career choices in addition to enhancing their proficiency with other surgical skills.

Orthopaedic Rehabilitation (ORTH6090, 5 credits) – PGY1

Orthopaedic rehabilitation focuses on functional recovery of patients affected by musculoskeletal injuries, diseases, or surgeries. It helps to alleviate pain, improve mobility, and enhance the overall quality of life for individuals with musculoskeletal limitations. During this rotation, residents will work with a multidisciplinary team of healthcare professionals, including rehabilitation physicians, physical therapists, occupational therapists, and exercise physiologists to implement the rehabilitation program for patients.

3D Technology in Orthopaedics (ORTH6110, 5 credits) – PGY3

This course is designed for Orthopaedic residents to gain knowledge and experience of 3D technology and its applications in Orthopaedic surgery. The residents will gain hands-on experience with 3D modeling, printing, and planning tools that are revolutionizing preoperative strategies and patient outcomes. Rotation objectives include understanding the fundamentals of 3D imaging and modeling in Orthopaedic anatomy, exploring the use of 3D printing for creating patient-specific surgical guides and implant, learning to integrate 3D planning into complex Orthopaedic procedures for improved accuracy and efficiency, evaluating the benefits and limitations of 3D technology in clinical practice.

Motion analysis (ORTH6120, 5 credits) – PGY3

This course is tailored for Orthopaedic residents to master the principles of motion analysis and its clinical applications. The residents will learn about biomechanics of human movement and the latest technologies used to assess and treat musculoskeletal conditions. Rotation

objectives include acquiring a solid understanding of gait and movement analysis techniques, learning to interpret motion analysis data for diagnostic and treatment planning, proficiency in utilizing motion analysis software and equipment, assessing the impact of surgical interventions and rehabilitation on patient mobility.

Orthopaedic Trauma

- Orthopaedic Trauma 1 (ORTH6131, 10 credits) – PGY1

- Orthopaedic Trauma 2 (ORTH6132, 17,5 credits) – PGY2

- Orthopaedic Trauma 3 (ORTH6133, 12,5 credits) – PGY3

The Orthopaedic trauma rotations are designed to expose residents to the management of patients with one or more musculoskeletal injuries. The residents function as important members of the Orthopaedic trauma team and work in collaboration with a multidisciplinary trauma surgery team and other medical specialties. Typically, PGY1 and PGY2 residents will be focused on the inpatient and outpatient workup of trauma patients and assist in the operating room. The PGY3 resident will guide the junior residents through this process and further develop their own skill set and sense of clinical autonomy.

Adult Reconstructive Orthopaedic Surgery

- Adult Reconstructive Orthopaedic Surgery 1 (ORTH6142, 10 credits) – PGY2

- Adult Reconstructive Orthopaedic Surgery 2 (ORTH6144, 10 credits) – PGY4

- Adult Reconstructive Orthopaedic Surgery 3 (ORTH6145, 10 credits) – PGY5

Thise clinical rotation focuses on the study, prevention, and reconstructive treatment of musculoskeletal issues. Residents gain hands-on experience in the operating room, participating in a variety of procedures such as total joint arthroplasty and complex revision surgeries. The course emphasizes the understanding of joint mechanics, prosthetic design, and the biological response to Orthopaedic implants and refining the residents' surgical techniques, patient evaluation, and postoperative care.

Sports Medicine

- Sports Medicine 1 (ORTH6152, 10 credits) – PGY2

- Sports Medicine 2 (ORTH6154, 10 credits) – PGY4

- Sports Medicine 3 (ORTH6155, 10 credits) – PGY5

The Sports Medicine rotation focuses on comprehensive care of athletes and individuals with sports-related injuries. This rotation is designed to provide residents with a broad understanding of sports medicine, including injury prevention, diagnosis, treatment, and rehabilitation. Residents will gain experience in managing acute injuries, chronic conditions,

and performance-related issues in athletes. They will be trained in arthroscopic and open surgical techniques for the treatment of sports injuries and collaborate with physical therapists, athletic trainers, and other healthcare professionals to ensure comprehensive patient care.

Musculoskeletal Oncology Surgery

- Musculoskeletal Oncology Surgery 1 (ORTH6163, 10 credits) – PGY2

- Musculoskeletal Oncology Surgery 2 (ORTH6164, 10 credits) – PGY3

- Musculoskeletal Oncology Surgery 3 (ORTH6165, 10 credits) – PGY4

The Musculoskeletal Oncology Surgery rotation focuses on the surgical treatment of benign and malignant tumors of the musculoskeletal system. During this rotation, residents gain experience in a variety of procedures and are expected to develop competencies in diagnosing and managing oncologic conditions involving the bones and soft tissues. The rotation aims to prepare residents for the challenges of musculoskeletal oncology, including complex reconstructions and the surgical management of complications related to limb salvage surgery.

Spine Surgery

- Spine Surgery 1 (ORTH6173, 10 credits) – PGY2

- Spine Surgery 2 (ORTH6174, 10 credits) – PGY3

- Spine Surgery 3 (ORTH6175, 10 credits) – PGY4

The Spine Surgery rotation focuses on the diagnosis and treatment of spinal disorders. This rotation covers a broad spectrum of spinal surgeries, including degenerative diseases, spinal deformities, trauma, tumors, and infections. Residents are expected to develop skills in both open and minimally invasive surgical techniques. They also learn about preoperative planning, intraoperative decision-making, and postoperative care, including rehabilitation. The rotation is designed to provide residents with a comprehensive understanding of the multidisciplinary approach required for optimal patient outcomes in spine surgery.

Hand surgery

- Hand Surgery 1 (ORTH6183, 12,5 credits) – PGY3

- Hand Surgery 2 (ORTH6185, 10 credits) – PGY5

The Hand Surgery rotation focuses on the comprehensive care of hand and upper extremity conditions. Residents in this rotation are exposed to a wide range of procedures, from common outpatient operations to complex reconstructions. During this rotation, residents learn to manage acute hand injuries, chronic disorders, congenital anomalies, and perform microvascular surgery. They also gain experience in non-operative management, including the

use of splints, casts, and other supportive devices. The rotation is designed to ensure that residents develop the skills necessary for the diagnosis, treatment, and rehabilitation of patients with hand and upper extremity issues. This includes mastering surgical techniques, understanding the anatomy and physiology of the hand, and learning how to coordinate care with other specialties such as plastic surgery and rheumatology.

Pediatric Orthopaedics

- Pediatric Orthopaedics 1 (ORTH6193, 12,5 credits) – PGY3

- Pediatric Orthopaedics 2 (ORTH6195, 10 credits) – PGY5

The Pediatric Orthopaedics rotation focuses on the Orthopaedic care of children. This rotation provides residents with exposure to a wide range of pediatric conditions, including congenital, developmental, and traumatic disorders of the musculoskeletal system. Residents learn to manage various Orthopaedic issues in children, from common fractures to complex congenital deformities. They are trained in both surgical and non-surgical treatments and work closely with pediatricians and other specialists to provide comprehensive care. By the end of the rotation, residents are expected to be proficient in pediatric Orthopaedic procedures and have a solid understanding of the growth and development issues unique to pediatric patients[2].

Elective Rotations

- Elective 1 (ORTH6204, 10 credits) – PGY4

- Elective 2 (ORTH6215, 10 credits) – PGY5

- Elective 3 (ORTH6225, 10 credits) – PGY5

During the PGY4 and PGY5 years, residents will be allowed to work on rotations of their choice. These are intended to allow residents to receive further training in specific areas of surgery which interest them, or which may be critical to any specialized training they wish to receive after completing residency. A total of 24 weeks (8 in PGY4 and 16 in PGY5) of elective time will be allowed. All elective rotations must be personally approved by the program director prior to the start of any academic year.