



COURSE CATALOG

**MASTER OF SCIENCE PROGRAM IN PROSTHETICS AND ORTHOTICS
(INTERNATIONAL PROGRAM)
ACADEMIC YEAR 2020**

**SIRINDHORN SCHOOL OF PROSTHETICS AND
ORTHOTICS (SSPO)**
FACULTY OF MEDICINE SIRIRAJ HOSPITAL,
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COURSE CATALOG

Master of Science Program in Prosthetics and Orthotics

(International Program)

Academic Year 2020

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DEGREE OFFERED

Master of Science Program in Prosthetics and Orthotics
(International Program)
M.Sc. (Prosthetics and Orthotics)

CURRICULUM STRUCTURE

Subject	Plan A2	Plan B	
Required courses	15	15	Credits
Elective courses not less than	9	15	Credits
Thesis	12	-	Credits
Thematic Papers	-	6	Credits
Total not less than	36	36	Credits

RECOMMENDED TWO-YEAR PLAN

FOR PLAN A2

1st Year

Semester 1			Credits	
SIID	503	Research Methodology in Biomedicine	2	(2-0-4)
SIPO	541	Seminar in Prosthetics and Orthotics I	1	(1-0-2)
SIPO	543	Medical Science for Prosthetics and Orthotics	2	(2-0-4)
SIPO	544	Advanced Biomechanics and Outcome Measurement	3	(2-2-5)
SIPO	545	Advanced Prosthetics and Orthotics	2	(2-0-4)
XXXX	XXX	Electives	3	(X-X-X)
Total			13	



RECOMMENDED TWO-YEAR PLAN (CONT.)

FOR PLAN A2

1st Year

Semester 2			Credits	
SIPO	542	Seminar in Prosthetics and Orthotics II	1	(1-0-2)
SIPO	546	Projects in Prosthetics and Orthotics	3	(0-6-3)
SIPO	547	Knowledge Translation in Prosthetics and Orthotics	1	(1-0-2)
XXXX	XXX	Electives	6	(X-X-X)
SIPO	698	Thesis	2	(0-12-0)
Total			13	

2nd Year

Semester 1			Credits	
SIPO	698	Thesis Proposal Defense	5	(0-12-0)
Total			5	

2nd Year

Semester 2			Credits	
SIPO	698	Thesis Thesis Defense Examination	5	(0-12-0)
Total			5	



RECOMMENDED TWO-YEAR PLAN

FOR PLAN B

1st Year

Semester 1			Credits	
SIID	503	Research Methodology in Biomedicine	2	(2-0-4)
SIPO	541	Seminar in Prosthetics and Orthotics I	1	(1-0-2)
SIPO	543	Medical Science for Prosthetics and Orthotics	2	(2-0-4)
SIPO	544	Advanced Biomechanics and Outcome Measurement	3	(2-2-5)
SIPO	545	Advanced Prosthetics and Orthotics	2	(2-0-4)
XXXX	XXX	Electives	3	(X-X-X)
Total			13	

1st Year

Semester 2			Credits	
SIPO	542	Seminar in Prosthetics and Orthotics II	1	(1-0-2)
SIPO	546	Projects in Prosthetics and Orthotics	3	(0-6-3)
SIPO	547	Knowledge Translation in Prosthetics and Orthotics	1	(1-0-2)
XXXX	XXX	Electives	6	(X-X-X)
Total			11	

2nd Year

Semester 1			Credits	
Comprehensive Examination and Thematic Papers				
SIPO	697	Thematic Papers	3	(0-9-0)
XXXX	XXX	Electives	6	(X-X-X)
Total			9	



RECOMMENDED TWO-YEAR PLAN (CONT.)

FOR PLAN B

2nd Year

Semester 2

Credits

SIPO 697	Thematic Papers Defense Examination	3	(0-9-0)
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Total	3
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COURSE DESCRIPTIONS

Required Courses

15 Credits

SIID 503 Research Methodology in Biomedicine

2(2-0-4)

Various types of research; applications of scientific process in the research design in biomedical sciences; a formulation of research questions and hypotheses; techniques of data collection and information sources in biomedical sciences; a critical appraisal of scientific research articles; research ethics; the animal use for research; the proposal development in biomedical science research

SIPO 541 Seminar in Prosthetics and Orthotics I

1(1-0-2)

Literature search in prosthetics and orthotics; an analysis and critical appraisal of prosthetics and orthotics research articles; an evaluation of prosthetics and orthotics research; strength and limitation of the applications of the research findings



SIPO 542 Seminar in Prosthetics and Orthotics II

1(1-0-2)

Research in Prosthetics and orthotics seminars; technologies in prosthetics and orthotics; prosthetic and orthotic development; presentation of prosthetic and orthotic research; Strength and limitation of applications of the research findings

SIPO 543 Medical Science for Prosthetics and Orthotics

2(2-0-4)

An integration of medical sciences and prosthetics and orthotics; in-depth analysis of the prosthetist and orthotist roles in medical multidisciplinary team in management of common pathologies including modern clinical practice setting

SIPO 544 Advanced Biomechanics and Outcome Measurement

3(2-2-5)

An application of advanced biomechanics of prosthetic and orthotic; an analysis of human movement; biomechanical analysis of prosthetic and orthotic experiment technique for the acceleration analysis and force plate; the principle of the 3-D motion analysis, the appropriate system of data analysis and report; an application of various tools used to assess diverse aspects of health including physical ability, quality of life and pain; a selection of appropriate assessment procedures used to measure both baseline status and any change in the status due to healthcare interventions or the natural progression of a condition.

SIPO 545 Advanced Prosthetics and Orthotics

2(2-0-4)

An application of advanced biomechanics and kinesiology of prosthetics and orthotics, material science and mechanical science; advanced components for prosthetics and orthotics, electronic prosthetics and orthotics which have been controlled by the biosignal and computerized system; Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM); mechanical structure and functions of prosthetic and orthotic components; the treatment plan and care management for people with physical disability and older people; practice in fabrication and fitting



SIPO 546 Projects in Prosthetics and Orthotics**3(0-6-3)**

The development of project proposals to answer defined clinical questions; a critical analysis of literature; an implementation of research pilot projects; reporting project findings to form conclusions to the clinical questions; formal presentations of project

SIPO 547 Knowledge Translation in Prosthetics and Orthotics**1(1-0-2)**

Definitions and characteristics of the knowledge translation, basic theories, frameworks, and models in the knowledge translation; the relationship between the knowledge translation and the evidence-based practice; the research design and intervention used in the knowledge translation; an application of knowledge translation in prosthetics and orthotics

Elective Courses**SIPO 502 Orthotic and Prosthetic Technologies****3(2-2-5)**

Principle and process of advanced material science and mechanical science; prosthetic and orthotic technology, carbon fiber manufacturing, silicon house, advanced prosthetic and orthotic components, Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), and 3D printing technology; mechanical structure and functions of prosthetic and orthotic components; the administration and management in prosthetics and orthotics factories.

SIPO 503 Health Education in Prosthetics and Orthotics**2(2-0-4)**

Public health; healthy behavior changes; health promotion; interpersonal environmental and societal aspects implications on prosthetics and orthotics; psychosocial perspectives; professional ethics; policy and advocacy



SIPO 506 Clinical Gait Analysis

3(2-2-5)

Functioning analysis, properties and biomechanics of muscles, tendons, bones and joints; center of mass and balance; human movement and control; ground reaction force and methodology for the human movement; the clinical analysis 3-D using the motion analysis and related tools and equipment

SIPO 507 Physiology of Exercise

3(2-2-5)

Effects of exercise, human functions; physiological reactions to physical exercise, varying levels of intensity, length and occurrence; functional capabilities of individual, a review of human movement science; practice of laboratory experiences

SIPO 509 Evidence-Based Practice in Prosthetics and Orthotics

3 (1-4-4)

Definitions and characteristics of evidence-based practices; basic principles of evidence-based practices; processes for evidence-based practices, definitions, characteristics, and sources of evidence; an evaluation and development of evidences in evidence-based practices; an integration of evidence to inform decision-making, communication and application of evidence-based practices into prosthetic and orthotic practices

SIPO 523 Advanced Spinal Orthotics

2(1-2-3)

An application of advanced biomechanics and kinesiology of spine, material science, and mechanical science; advanced components for spinal orthotics; Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM), the computerized system for treatments and monitoring, the experimental analysis, the pressure distribution inside spinal orthoses; the medical imaging analysis before and after using spinal orthoses; the treatment plan and care management for people with the associated pathologies, practices in fabrication and fitting



SIPO 524 Seating and Other Orthotic Devices**2(1-2-3)**

An application of advanced biomechanics, kinesiology of spine and trunk, material science, mechanical science, advanced components for seating and other orthoses; Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM), the experimental analysis, the pressure distribution inside the device, the medical imaging analysis, before and after use of the device; the gait and motion analysis; the treatment plan and care management for people with associated pathologies; practising in fabrication and fitting

SIPO 537 Medical Footwears**2 (1-2-3)**

Anatomy and the structure of medical footwears; materials, tools and equipment; characteristics and directions of the use related to the variation of the medical orthopedic footwears for ankles and foot problems or pathologies; variation of shoe, shoe construction design and its advantage, shoe making skills, sewing, fabrication techniques and shoe fitting technique by apply knowledge from research paper and textbook

SIPO 536 Pedorthic Management for Foot Problems**2 (1-2-3)**

The management of the foot problems in clinical practices; in-depth explorations on treatment principles; problems in clinical practices; appropriate orthotic prescriptions; treatment process associated with the pedorthic management; evidence-based practices of treatments for various foot problems in current clinical practices

SIPO 551 Clinical Practice in Prosthetics and Orthotics**3 (0-6-3)**

Clinical prosthetic and orthotic practices of advanced prosthetic and orthotic principles, to assigned patients under the supervision emphasizing on the patient assessment, prescription recommendation, fabrication techniques, fitting and adjustment; professional ethics, patient's right and good human relations



SIPO 552 Assistive Technology for Physical Disabilities

3 (1-4-4)

An assessment and prescription of appropriate assistive technology for people with physical disability and elderly persons; description and analysis of gait using related assistive technologies; appropriate training of users to use assistive technology

SIPO 553 Technical Writing and Visualization for Prosthetics and Orthotics

3 (3-0-6)

Writing and visualization; skills and attributes development in effective communication of research and clinical reports; using visual and document design; audience awareness, precision in communication, scaffolded in-depth writing and visualization projects; The development of research skills, business and clinical practice skills

SIPO 554 Critical Appraisal of Research Literature

2 (2-0-4)

Critical appraisal of scientific literature; an evaluation of research rationale, methodologies, data analysis, presentations of results and research implications to evidence-based practices, the strength and weakness assessment; critical reviews of the past and current prosthetics, orthotics, rehabilitation science and related research

SIPO 555 Applied Fitting Techniques in Prosthetics and Orthotics

3(2-2-5)

Affordability and adjustability of immediate fitting in prosthetics and orthotics; global practices in applied Fitting techniques; identification, practices and appropriate prosthetic and orthotic fitting in various situations; cultural difference, multiple limb amputations, gender or different generations

SIPO 556 Theory and Application of International Classification of Functioning

1(1-0-2)

An introduction to International Classification of Functioning, Disability, and Health (ICF); concepts of functioning, disability, and health; theory, models and principles of ICF; components of ICF, the use of ICF; applications of ICF in prosthetics and orthotics



SIPO 557 Organization Management in Prosthetics and Orthotics

3(2-2-5)

Basic principles of organization management; organization structure, human resource management, organization symbols, financial and managerial accounting, unit cost calculation; application of knowledge for organization management of prosthetics and orthotics in public and private sectors

