

**DEGREE AWARD**

Bachelor of Science (Biomedical Sciences)

PERIOD OF STUDY

4 Years

SEMESTER OF COMMENCEMENT

June (Summer), August (1st Semester), January (2nd Semester)

COURSE FEES

Approximately 450,000 Baht (112,500 Baht per year)

COURSE DESCRIPTION AND PURPOSE

Biomedical sciences program provides knowledge of medical subjects covering Anatomy, Biochemistry, Ergonomics, Microbiology, Pathology, Pharmacology, Physiology, and Toxicology. All students will acquire not only basic and advance knowledge in biomedical areas but also research skills. Graduates are prepared for pursuing professions in biomedical careers.

EMPLOYMENT OUTCOMES

After completion of the program, graduates will be able to enter a vast range of health-related professions such as medical researcher, physiologist, microbiologist, health informatics expert, occupational health and safety expert, pharmaceutical product manager, and laboratory supervisor.

Curriculum Structure :

Total	128 credits
General Education Courses	30 credits
Specific Courses	92 credits
1) Basic science courses	15 credits
2) Major courses	77 credits
2.1 Major required Courses	68 credits
2.2 Major elective Courses	9 credits
Free Elective Courses	6 credits

A) BASIC SCIENCE COURSES 15 CREDITS

Code	Course Title	Credit
BIO 131	General Biology	3 (3-0-6)
CHM 129	Introduction to Chemistry	4(3-3-8)
CHM 233	Analytical Chemistry	3(2-3-6)
PHY 135	Life Science Physics	3(2-3-6)
MAT 146	Introductory to Statistics for Biomedical Sciences	3(3-0-6)

B) MAJOR REQUIRED COURSES 77 CREDITS

Code	Course Title	Credit
ANA 100	Basic Anatomy	3(2-3-6)
PSO 100	Basic Physiology	3(3-0-6)
PSO 102	Basic Physiology Laboratory	1(0-3-2)
BCH 201	Basic Biochemistry	4(3-3-8)
PAT 203	Basic Pathology	3(3-0-6)
MIC 305	Microbiology and Immunology	4(3-3-8)
PMC 331	Basic Pharmacology	3(3-0-6)
BMS 103	Introduction to Biomedical Sciences	1(1-0-2)
BMS 104	Introduction to Cell and Molecular Biology	1(1-0-2)
BMS 211	Biomedical Instrumentation and International Organization for Standardization	3(2-3-6)

BMS 214	Ergonomics	3(3-0-6)
BMS 215	Applied Physiology	3(3-0-6)
BMS 302	Scientific Communication	2(2-0-6)
BMS 322	Genetic Engineering	3(2-3-6)
BMS 323	Bioinformatics	2(1-3-4)
BMS 220	Medical Science Organization and Management	3(3-0-6)
BMS 324	Research Methodology	3(3-0-6)
BMS 329	Medical Science Innovations	2(2-0-4)
BMS 339	Applied Microbiology and Immunology	3(2-3-6)
BMS 341	Seminar I	1(0-3-2)
BMS 401	Integrated Medical Sciences	1(0-3-2)
BMS 403	Microscopic Anatomy	3(2-3-6)
BMS 418	Toxicology	3(2-3-6)
BMS 419	Practical Training	3(0-35-18)
BMS 420	Medical Science Management	2(2-0-4)
BMS 435	Systemic Pathology	3(2-3-6)
BMS 442	Seminar II	1(0-3-2)
BMS 495	Senior Project	4(0-12-6)
BMS 496	Independent Study	1(0-35-18)
BMS 497	Cooperative Education	6(0-35-18)

MAJOR ELECTIVE COURSES**9 CREDITS**

Students can select any subjects from list of course.

Code	Course Title	Credit
BMS 404	Neuroscience)	3(2-3-6)
BMS 406	Enzyme Technology	3(3-0-6)
BMS 410	Exercise Physiology	3(3-0-6)
BMS 412	Pharmaceutical Biotechnology	3(3-0-6)
BMS 421	Occupational Ergonomics	3(2-3-6)
BMS 436	Hematology	3(2-3-6)
BMS 439	Diagnostic Microbiology and Immunology	3(2-3-6)
BMS 450	Aging and Regenerative medicine	3(3-0-6)
BMS 451	Precision medicine	3(3-0-6)
BMS 452	Cosmetics and Nutraceutical	3(3-0-6)

BCH 201 Basic Biochemistry 4(3-3-8)

Prerequisite: CHM 129 Introduction to Chemistry

Structures and functions of biomolecules; protein, carbohydrates, fat, nucleic acid, vitamin in aspect of synthesis, digestion, absorption, metabolism; genetic diseases; malnutrition and prevention.

PAT 203 Basic Pathology 3(3-0-6)

Prerequisite: ANA 100 Basic Anatomy

Pathologic changes of cells/tissues from various injuries, responses to the injuries, immunologic disorders, neoplasm, infectious diseases, genetic disorders, nutritional imbalance, diseases of infants.

MIC 305 Microbiology and Immunology 4(3-3-8)

Prerequisite: BIO 131 General Biology

Various types of microorganisms; bacteria, fungi, parasite and virus; structural components and their functions, cultivation, growth, metabolisms, genetics and controls of the microorganism; microbial virulence factors, microbial pathogenesis and host responses to microbial infections; immune defense mechanisms, complement system, immune responses to infectious agents, hypersensitivity and autoimmune diseases.

BMS 421 Occupational Ergonomics 3(2-3-6)

Prerequisite: BMS 214 Ergonomics

Implementation of ergonomics knowledge in design and re-design of working systems in various occupations in order to minimize risks from external workload determining factors; task, organization and environments, physiological and psychological responses of human operators are used as an evaluation tool through questioning the exposed users about their experiences, effects caused by psychosomatic and functional measurements.

BMS 436 Hematology 3(2-3-6)

Prerequisite: PAT 203 Basic Pathology

Red blood cells, white blood cells and hemostasis, pathophysiology of hematological system, hematologic disorders, essential laboratory diagnosis, applications in hematological researches.

BMS 439 Diagnostic Microbiology and Immunology 3(2-3-6)

Prerequisite: MIC 305 Microbiology and Immunology

Principles and practice of laboratory techniques for diagnosis of infectious diseases caused by bacteria, viruses, parasites and fungi, clinical specimens of choice, specimen collection and transport, laboratory techniques including antigen or antibody detection, DNA-based diagnostics, protein-based diagnostics, metabolite-based diagnostics or metabolites as disease markers.

BMS 450 **Aging and Regenerative medicine** **3(3-0-6)**

Aging and regenerative medicine, biological of aging, aging of nervous system, aging of circulatory system, aging of endocrine system, aging of skin system, molecular biology basis for regenerative medicine, regenerative medicine for degenerative disease, and alternative medicine for healthy

BMS 451 **Precision medicine** **3(3-0-6)**

Human genetics and genomes, pharmacogenomics, advances in genetics information technology, genetic testing and biomarkers, individual drug therapy, drug discovery and development, genetic markers-based health care

BMS 452 **Cosmetics and Nutraceuticals** **3(3-0-6)**

Fundamental concepts of cosmetic science, basic physiology of skin, hair, eyes, nail, concept of cosmetic formulations, quality control and regulations of cosmetic products, definition of nutraceuticals, discovery and classification of nutraceuticals, nutraceutical products in healthcare, nutraceutical products in therapy, drug interaction and adverse effects of