

**SCPA 602: Anatomical Basis for
Pathological Study**

Academic Year 2018

**Department of Pathobiology
Mahidol University**

Course Syllabus

(Lecture-Lab-Self-study)

SCPA 602 Anatomical Basis for Pathological Study 2(1-2-3)

Structure and organization at molecular and cellular levels of organelle, cell, tissue and organ; Structure and function of epithelial tissue, connective tissue, muscle, bone, blood, tegumental system, cardiovascular system, immune system, nervous system, endocrine system, respiratory system, digestive system, urinary system, and reproductive system; Observation of normal tissues under the microscope. Examination of structural changes of abnormal organs and tissues

Prerequisite	None
Type of Course	Selective course
Session	1 st Semester
Course Conditions	class size: None

Course Objectives

At the completion of the course, students should be able to:

1. Understand the concept of human anatomy
2. Explain the organization of human body
3. Explain the structure and function of organ systems
4. Observe and practice in macro- and micro-anatomy
5. Discussion and analysis on gross and histological specimens in relationship to pathological changes

Course Outline

	Topic	Hour			Instructor
		Lecture/ Discussion	Lab.	Self- study	
1	Introduction to structure and organization	1		2	Staffs of Pathobiology
	Lab-Introduction to structure and organization		2	1	
2	Epithelium and connective tissues	1		2	
	Lab-Epithelium and connective tissues		2	1	
3	Integumentary system	1		2	
	Lab-Integumentary system		2	1	
4	Blood and hematopoiesis	1		2	
	Lab-Blood and hematopoiesis		2	1	
5	Musculoskeletal system	1		2	
	Lab-Musculoskeletal system		2	2	
6	Immune and lymphatic system	1		2	
	Lab-Immune and lymphatic system		2	1	
7	Nervous system	1		2	
	Lab-Nervous system		2	1	
8	Endocrine system	1		2	
	Lab-Endocrine system		2	1	
	Examination: Lecture	L 1-8			
	Examination: Laboratory	Lab 1-8			
9	Cardiovascular system	1		2	
	Lab-Cardiovascular system		2	1	
10	Respiratory system	1		2	
	Lab-Respiratory system		2	1	
11	Liver and biliary system	1		2	
	Lab-Liver and biliary system		2	1	
12	Gastrointestinal system	1		2	
	Lab-Gastrointestinal system		2	1	
13	Urinary system	1		2	
	Lab-Urinary system		2	1	
14	Male reproductive system	1		2	
	Lab-Male reproductive system		2	1	

	Topic	Hour			Instructor
		Lecture/ Discussion	Lab.	Self- study	
15	Female reproductive system	1		2	
	Lab- Female reproductive system		2	1	
	Examination: Lecture	L 9-15			
	Examination: Laboratory	Lab 9-15			

Teaching methods

1. In-class lectures and discussion for 15 hours.
2. In-laboratory practice and discussion for 30 hours.

Teaching Media

1. Class handouts, Powerpoint presentation, Publications
2. Digital images for Anatomy and Histology
3. Histological glass slides / Microscopes
4. Online educational media

Measurement and Evaluation of Students Achievement

1. Discussion, Participation, Interactive performance 20 %
2. Written Examination in theory and laboratory twice during the course 80 %
3. Student Examination Grade = A, B+, B, C+, C, D+, D, F

Course Evaluation

1. Students gain knowledge according to the course objectives.
2. Students give written course evaluation at the end of the course.
3. Evaluate students' satisfaction towards teaching and learning of the course using a questionnaire.
4. The lecturer will be notified with the result of the course evaluation from students to further improve the lecturing process

References

- Marieb EN and Hoehn K. 2016. *Human Anatomy and Physiology*. 10th Edition. Pearson. 1261pp. ISBN-10 1292096977
- Young B, O'Dowd G, and Woodford P. 2013. *Wheater's Functional Histology: A Text and Colour Atlas*. 6th Edition. Elsevier. ISBN-10: 0702047473
- Kierszenbaum AL and Tres LL. 2015. *Histology and Cell Biology: An Introduction to Pathology*. 4th Edition. Saunders. 752pp. ISBN- 9780323313308.
- Histology Guide: Virtual Histology Laboratory. <http://160.94.138.53/index.html>

Instructors

1. ANJ = Assistant Professor Dr.Amornrat Jensen
2. NC = Dr.Nisamanee Charoenchon
3. NK = Dr.Niwat Kangwanrangsana
4. PC = Dr.Pornthip Chaichompoo
5. PS = Associate Professor Dr.Prasit Suwannalert
6. SN = Somphong Narkpinit, M.D.
7. WJ = Associate Professor Dr.Wanee Jiraungkoorskul
8. WP = Dr.Witchuda Payuhakrit
9. YN = Dr.Yaowarin Nakornpakdee

Coordinator Dr.Niwat Kangwanrangsana

Department of Pathobiology, Faculty of Science, Mahidol University

Tel. 02-201-5576, E-mail: niwat.kan@mahidol.ac.th

Leading questions

L01 Introduction to structure and organization

- 1) What is the level of organization? Why does it so important for human body?

L02 Epithelium and connective tissues

- 1) “Where” and “How” are epithelium and connective tissues function?

L03 Integumentary system

- 1) What are organs comprised in the integumentary system?
- 2) What are diseases related integumentary system that you are familiar with?

L04 Blood and hematopoiesis

- 1) What are the key factors of hematopoietic cell differentiation in each lineage ?

L05 Musculoskeletal system

- 1) What is the meaning of musculoskeletal system?

L06 Immune and lymphatic system

- 1) What are the anatomy and histology of bone marrow, lymph nodes, spleen and thymus?

L07 Nervous system

- 1) What are the differences between central nervous system and peripheral nervous system?

L08 Endocrine system

- 1) What are endocrine organs?
- 2) What are endocrine hormones?

L09 Cardiovascular system

- 1) What are the component parts of the cardiovascular system?

L10 Respiratory system

- 1) What are the component parts of the respiratory system?

L11 Liver and biliary system

- 1) What are the organs and its functions in biliary system?

L12 Gastrointestinal system

- 1) What is the gastrointestinal tract?

L13 Urinary system

- 1) What is the major function of urinary system?

L14 Male reproductive system

- 1) What dominant types of cells in male reproductive system and their functions?

L15 Female reproductive system

- 1) Identify the organs in female reproductive system ?

Lesson Plan

1. Topic	L01 - Introduction to structure and organization
2. Name Lecturer	Niwat Kangwanransan
Education	Ph.D. (Medical Sciences)
Position	Lecturer
Contact	02-201-5576, Email: niwat.kan@mahidol.ac.th
3. Course	Anatomical Basis for Pathological Study (SCPA 602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	17 August 2018 (9.00-12.00)
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Understand the concepts of human structure and function 2. Explain level of organization of human body 3. Explain the use of basic concept of anatomy for pathological study
7. Topic Detail	
	<ol style="list-style-type: none"> 1. Organization of human body 2. Macro- and Micro-anatomy 3. Anatomy and Pathology
8. Learning Methods	Lecture, Group discussion, Laboratory
9. Teaching Media	Power point presentation, Handout, Text books, Online atlas
10. Teaching Equipment	Computer, LCD
11. Examination and Evaluation	Class participation and written examination
12. Date of Improvement	30 July 2018

Lesson Plan

1. Topic	L02 - Epithelium and connective tissues
2. Name Lecturer	Niwat Kangwanrangsang
Education	Ph.D. (Medical Sciences)
Position	Lecturer
Contact	02-201-5576, Email: niwat.kan@mahidol.ac.th
3. Course	Anatomical Basis for Pathological Study (SCPA 602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	17 August 2018 (13.00-16.00)
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Understand the important of epithelium and connective tissues 2. Classify the types of epithelium and connective tissues 3. Explain the structure and function of epithelium and connective tissues
7. Topic Detail	
	<ol style="list-style-type: none"> 1. Normal anatomy and histology of skin and its derivatives 2. Pathology of common diseases in skin its derivatives 3. Natural skin creases and wrinkles
8. Learning Methods	Lecture, Group discussion, Laboratory
9. Teaching Media	Power point presentation, Handout, Text books, Online atlas
10. Teaching Equipment	Computer, LCD, Digital images, Glass slides
11. Examination and Evaluation	Class participation and written examination
12. Date of Improvement	30 July 2018

Lesson Plan

1. Topic	L03 - Integumentary system
2. Name Lecturer	Nisamanee Charoenchon
Education	Ph.D. (Medicine)
Position	Lecturer
Contact	02-201-5573, Email: nisamanee.cha@mahidol.ac.th
3. Course	Anatomical Basis For Pathological (SCPA 602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	20 August 2018, 9.00-12.00 am.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Describe the anatomy and histology of skin and its derivatives 2. Describe the clinical aspect of common diseases in skin and its derivatives 3. Discriminate the aspects between young skin and aged skin
7. Topic Detail	
	<ol style="list-style-type: none"> 1. Normal anatomy and histology of skin and its derivatives 2. Pathology of common diseases in skin its derivatives 3. Natural skin creases and wrinkles
8. Learning Methods	Lecture, Laboratory, Group discussion and Self study
9. Teaching Media	PPT, Handout, Text book, Gross specimens and Glass slides of histopathology
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	In-class participation, post test and written examination
12. Date of Improvement	30 July 2018

Lesson Plan

1. Topic	L04 - Blood cell and hematopoiesis
2. Name Lecturer	Pornthip Chaichompoo
Education	Ph.D. (Immunology)
Position	Lecturer
Contact	02-201-5577, Email: pornthip.chh@mahidol.ac.th
3. Course	SCPA 602 Anatomical basis for pathological study 2(1-2-3)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	August 24, 2018 at 09.00 – 12.00 a.m.
6. Topic Objective	
<p>At the completion of this unit the student will be able to;</p> <ol style="list-style-type: none"> 1. Describe composition and functions of blood cells 2. Describe the mechanism of hematopoiesis 3. Classify and identify blood cells including erythroid series, granulocytic series, lymphocytic series, plasmocytic series, monocytic series and megakaryocytic series 	
7. Topic Detail	
<ol style="list-style-type: none"> 1. Composition and functions of blood cells 2. Mechanism of hematopoiesis 3. Morphology and maturation of blood cells including erythroid series, granulocytic series, lymphocytic series, plasmocytic series, monocytic series and megakaryocytic series 	
8. Learning Methods	Lecture
9. Teaching Media	Power point presentation, Handout, Text book
10. Teaching Equipment	Computer, LCD
11. Examination and Evaluation	Assay Examination
12. Date of Improvement	July 30, 2018

Lesson Plan

1. Topic	L05 - Musculoskeletal system
2. Name Lecturer	Witchuda Payuhakrit
Education	Ph.D. (Pathobiology)
Position	Lecturer
Contact	02-201-5572, Email: witchuda.pay@mahidol.ac.th
3. Course	Anatomical Basis For Pathological Study (SCPA602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	24 August 2018 (1:00-4:00 Pm.)
6. Topic Objective	At the completion of this unit the student will be
	<ol style="list-style-type: none"> 1. Understand the structure and function of musculoskeletal system 2. Describe and differentiate histology of supporting/ connective tissues 3. Describe and differentiate histology of muscle tissues 4. Describe and differentiate histology of skeletal tissues
7. Topic Details	
	<ol style="list-style-type: none"> 1. Structure and function of musculoskeletal system 2. Supporting/ connective tissues 3. Muscle tissues 4. Skeletal tissues
8. Learning Methods	Lecture, Presentation, Group discussion
9. Teaching Media	Power point presentation, Handout, Text books, Publications
10. Teaching Equipment	Computer, LCD
11. Examination and Evaluation	Written examination
12. Date of Improvement	25 July 2018

Lesson Plan

1. Topic	L06 - Immune and Lymphatic system
2. Name Lecturer	Dr. Yaowarin Nakornpakdee
Education	Ph.D. (Medical Microbiology)
Position	Lecturer
Contact	02-201-5578, Email: yaowarin-arin@hotmail.com
3. Course	Anatomical Basis for Pathological Study (SCPA 602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	27 August 2017, 9.00-12.00 am.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Describe the anatomy and histology of bone marrow, lymph nodes, spleen and thymus 2. Describe the pathogenesis of bone marrow, lymph node, spleen and thymus disease 3. Sort out the defense mechanism of immune and lymphatic system
7. Topic Detail	
	<ol style="list-style-type: none"> 1. Normal anatomy and histology of bone marrow, lymph nodes, spleen and thymus 2. Pathology of common diseases in bone marrow, lymph nodes, spleen and thymus 3. The defense mechanism of immune and lymphatic system
8. Learning Methods	Lecture, Laboratory, Group discussion and Self study
9. Teaching Media	Power Point, Handout, Text book, Gross specimens and Glass slides of histopathology
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	In-class participation, post test and written examination
12. Date of Improvement	29 July 2018

Lesson Plan

1. Topic	L07 - Nervous system
2. Name Lecturer	Witchuda Payuhakrit
Education	Ph.D. (Pathobiology)
Position	Lecturer
Contact	02-201-5572, Email: witchuda.pay@mahidol.ac.th
3. Course	Anatomical Basis For Pathological Study (SCPA602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	29 August 2018 (9:00-12:00 Am.)
6. Topic Objective	At the completion of this unit the student will be
	<ol style="list-style-type: none"> 1. Understand the structure and function of nervous system 2. Describe and differentiate histology of central nervous system 3. Describe and differentiate histology of peripheral nervous system
7. Topic Details	
	<ol style="list-style-type: none"> 1. Structure and function of nervous system 2. Central nervous system 3. Peripheral nervous system
8. Learning Methods	Lecture, Presentation, Group discussion
9. Teaching Media	Power point presentation, Handout, Text books, Publications
10. Teaching Equipment	Computer, LCD
11. Examination and Evaluation	Written examination
12. Date of Improvement	25 July 2018

Lesson Plan

1. Topic	L08 - Endocrine system
2. Name Lecturer	Amornrat Naranuntarat Jensen
Education	Ph.D. (Toxicology)
Position	Assistant Professor
Contact	02-201-5579, Email: amornrat.nar@mahidol.ac.th
3. Course	Anatomical Basis for Pathological Study (SCPA 602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	31 August 2018, 9:00-12:00PM
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Describe locations and hormones secreted by endocrine glands 2. Explain the actions of endocrine hormones
7. Topic Detail	
	<ul style="list-style-type: none"> - Type of glands - Mechanisms of hormone action - Pineal gland - Pituitary gland - Thyroid gland - Parathyroid gland - Adrenal gland - Endocrine pancreas
8. Learning Methods	Lecture, class discussion, and self-study
9. Teaching Media	Handout, Text book
10. Teaching Equipment	Computer, LCD
11. Examination and Evaluation	Short assay examination
12. Date of Improvement	31 July 2018

Lesson Plan

1. Topic	L09 - Cardiovascular System
2. Name Lecturer	Wanee Jiraungkoorskul
Education	Ph.D. (Biology)
Position	Associate Professor
Contact	02-201-5563, 5571, Email: wanee.jir@.mahidol.ac.th
3. Course	Anatomical Basis for Pathological Study (SCPA 602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	10 September 2018, 9.00-12.00 am.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Describe the anatomy and histology of cardiovascular system 2. Describe the interrelationships and functions of the different parts of the cardiovascular system.
7. Topic Detail	
	Anatomy and histology of cardiovascular system, Interrelationships and functions of the different parts
8. Learning Methods	Lecture, Lab experiment, Self-study, Group discussion
9. Teaching Media	Power point presentation, Handout, Text book, Glass slide, Gross specimen
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Examination, Posttest, Lab report
12. Date of Improvement	29 July 2018

Lesson Plan

1. Topic	L10 - Respiratory System
2. Name Lecturer	Wanee Jiraungkoorskul
Education	Ph.D. (Biology)
Position	Associate Professor
Contact	02-201-5563, 5571, Email: wanee.jir@.mahidol.ac.th
3. Course	Anatomical Basis for Pathological Study (SCPA 602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	12 September 2018, 9.00-12.00 am.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Describe the anatomy and histology of respiratory system 2. Describe the interrelationships and functions of the different parts of the respiratory system.
7. Topic Detail	
	Anatomy and histology of respiratory system, Interrelationships and functions of the different parts
8. Learning Methods	Lecture, Lab experiment, Self-study, Group discussion
9. Teaching Media	Power point presentation, Handout, Text book, Glass slide, Gross specimen
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Examination, Posttest, Lab report
12. Date of Improvement	29 July 2018

Lesson Plan

1. Topic	L11 - Liver and biliary system
2. Name Lecturer	Witchuda Payuhakrit
Education	Ph.D. (Pathobiology)
Position	Lecturer
Contact	02-201-5572, Email: witchuda.pay@mahidol.ac.th
3. Course	Anatomical Basis For Pathological Study (SCPA602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	14 September 2018 (9:00-12:00 Am.)
6. Topic Objective	At the completion of this unit the student will be
	<ol style="list-style-type: none"> 1. Describe the functions of liver and biliary system 2. Differentiate histology of components in liver and biliary system
7. Topic Details	
	<ol style="list-style-type: none"> 1. Structure and function of liver and biliary system 2. The components of liver and biliary system 3. The histology and function of components in liver and biliary system
8. Learning Methods	Lecture, Presentation, Group discussion
9. Teaching Media	Power point presentation, Handout, Text books, Publications
10. Teaching Equipment	Computer, LCD
11. Examination and Evaluation	Written examination
12. Date of Improvement	25 July 2018

Lesson Plan

1. Topic	L12 - Gastrointestinal system
2. Name Lecturer	Prasit Suwannalert
Education	Ph.D. (Pathobiology)
Position	Associate Professor
Contact	02-201-5558, Email: prasit.suw@mahidol.ac.th
3. Course	Anatomical Basic for Pathological Study (SCPA 602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	17 September 2018 Time 9.00-12.00 AM
6. Topic Objective	At the completion of this unit the student will be able to
	1. Describe the anatomical structure and histology of gastrointestinal tract
7. Topic Detail	
	1. Anatomical structure of esophagus, stomach, small intestine, and large intestine 2. Histological examination of esophagus, stomach, small intestine, and large intestine
8. Learning Methods	Lecture, Discussion, Laboratory, and Self study
9. Teaching Media	Handout, Text book, Gross specimen, and Glass slide
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Participate in Discussion, Examination by short assay
12. Date of Improvement	29 July 2018

Lesson Plan

1. Topic	L13 - Urinary system
2. Name Lecturer	Somphong Narkpinit
Education	MD.
Position	Lecturer
Contact	02-201-5550, Email: somphong.nar@mahidol.ac.th
3. Course	Anatomical basis for pathological study (SCPA 602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	19 September 2018 Time 9.00-12.00 AM
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Understand and identify structure and function of urinary system 2. Describe the macro- and microscopic appearance of organs in urinary system and common associated disease
7. Topic Detail	
	Structure and function of urinary system including, macro- and microscopic appearance of organs in urinary system and common associated disease
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Glass slide, Gross specimen, and CAI
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Posttest and examination by short assay
12. Date of Improvement	July 2018

Lesson Plan

1. Topic	L14 - Integumentary system
2. Name Lecturer	Nisamanee Charoenchon
Education	Ph.D. (Medicine)
Position	Lecturer
Contact	02-201-5573, Email: nisamanee.cha@mahidol.ac.th
3. Course	Anatomical Basis For Pathological (SCPA 602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	20 August 2018, 9.00-12.00 am.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Describe the anatomy and histology of skin and its derivatives 2. Describe the clinical aspect of common diseases in skin and its derivatives 3. Discriminate the aspects between young skin and aged skin
7. Topic Detail	
	<ol style="list-style-type: none"> 4. Normal anatomy and histology of skin and its derivatives 5. Pathology of common diseases in skin its derivatives 6. Natural skin creases and wrinkles
8. Learning Methods	Lecture, Laboratory, Group discussion and Self study
9. Teaching Media	PPT, Handout, Text book, Gross specimens and Glass slides of histopathology
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	In-class participation, post test and written examination
12. Date of Improvement	30 July 2018

Lesson Plan

1. Topic	L15 - Female reproductive system
2. Name Lecturer	Somphong Narkpinit
Education	MD.
Position	Lecturer
Contact	02-201-5550, Email: somphong.nar@mahidol.ac.th
3. Course	Anatomical basis for pathological study (SCPA 602)
4. Programme Title	M.Sc. and Ph.D. in Pathobiology
5. Date and Time	24 September 2018 Time 9.00-12.00 AM
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Understand structure and function of female reproductive organ 2. Identify and describe the normal histology of each organ female reproductive system 3. Describe the gross and histopathological changes of important disease in female reproductive system
7. Topic Detail	
	Structure and function of male and female reproductive organ, normal histology of each organ in male and female reproductive system, gross and histopathological changes of important disease.
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Glass slide, Gross specimen, and CAI
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Posttest and examination by short assay
12. Date of Improvement	July 2018