

SCBM 343: Clinical Pathology

Academic Year 2017-2018

Department of Pathobiology

Faculty of Science

Mahidol University

Course Syllabus

(Lecture-Lab-Self-study)

SCBM 343 Clinical Pathology

2(1-2-3)

Examination in the laboratory for the diagnosis and prognosis of the diseases, interpretation in hematology, blood bank, immunology, clinical microscopy, clinical chemistry, and the skill in the laboratory practice

Prerequisite SCBM 341 General Pathology

Type of Course Required course

Session 2nd Semester, Third year student

Course Condition class size: None

Course Objective

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

1. Discuss the relationship between anatomic and clinical pathology.
2. Develop the attitude of active learning and be able to keep their standard of practice.

Course Outline

Date	Time	Topic	Lecture	Lab	Lecturer
19 March	13.00-14.00	Specimen collection and interpretation	L1		WJ
	14.00-16.00	How to collect specimen		2	WJ
20 March	13.00-14.00	Pathology of red blood cell / Pathology of white blood cell	L2		NK
	14.00-16.00	RBC Morphology / WBC Morphology and differentiation		2	NK
26 March	13.00-14.00	Complete blood count	L3		WJ
	14.00-16.00	Blood cell count		2	WJ
27 March	13.00-14.00	Anemia / Thalassemia	L4		PC
	14.00-16.00	Anemia / Thalassemia		2	PC
2 April	13.00-14.00	Leukemia	L5		WP
	14.00-16.00	Leukemia		2	WP
3 April	13.00-14.00	Immunodiagnosis	L6		WP
	14.00-16.00	RPR test		2	WP
9 April	9.00-10.00	Body fluid examination	L7		WJ
	10.00-12.00	Body fluid examination		2	WJ
	13.00-14.00	Urine analysis	L8		WJ
	14.00-16.00	Urine analysis		2	WJ
21 April	9.00-12.00	Examination (L1-L8)	Staff		
23 April	9.00-10.00	Renal function test	L9		SN
	10.00-12.00	Renal function test		2	SN

Date	Time	Topic	Lecture	Lab	Lecturer
	13.00-14.00	Lipid profile	L10		SN
	14.00-16.00	Lipid profile		2	SN
24 April	9.00-10.00	Liver function test	L11		WP
	10.00-12.00	Liver function test		2	WP
	13.00-14.00	Tumor markers and Cytology	L12		PS
	14.00-16.00	Tumor markers and Cytology		2	PS/WP
1 May	9.00-10.00	Molecular diagnosis I	L13		ANJ
	10.00-12.00	Molecular Techniques I		2	ANJC
	13.00-14.00	Molecular diagnosis II	L14		ANJ
	14.00-16.00	Molecular Techniques II		2	ANJ
*Wed2 May (Phyathai)	13.00-14.00	Glucose Tolerance Test	L5		NC
	14.00-16.00	Glucose Tolerance Test		2	NC
23 May	9.00-12.00	Examination (L9-L15)	Staff		
		Total	15	30	

Teaching Method

1. Lectures in class 15 hours.
2. Students design and carry out experiments in laboratory session 30 hours.

Teaching Media

1. Class handouts, Powerpoint presentation
2. Laboratory material and equipment

Measurement and Evaluation of Students Achievement

1. Discussion, Participation, and Interactive performance 20 %
2. Written Examination in theory twice during the course 40 %
3. Pre/Post-test or Lab report in class 40%
4. 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

1. McPherson R, Pincus M. Henry's Clinical Diagnosis and Management by Laboratory Methods. 22nd edition. Saunders, 1568p.

Instructors

1. ANJ = Assistant Professor Amornrat Naranuntarat Jensen, Ph.D
2. NC = Nisamanee Charoenchon, Ph.D
3. NK = Niwat Kangwanrangsang, Ph.D
4. PC = Pornthip Chaichompoo, Ph.D
5. PS = Assistant Professor Prasit Suwannalert, Ph.D
6. SN = Somphong Narkpinit, M.D.
7. WJ = Associate Professor Wannee Jiraungkoorskul, Ph.D
8. WP = Witchuda Payuhakrit, Ph.D

Coordinator Associate Professor Dr. Wannee Jiraungkoorskul

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Program Director Dr. Niwat Kangwanrangsang

Department of Pathobiology, Faculty of Science, Mahidol University

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

Lesson Plan

1. Topic	LM1- Specimen collection and interpretation
2. Name Lecturer	Dr. Wannee Jiraungkoorskul
Education	Ph.D. (Biology)
Position	Associate Professor
Contact	02-201-5571, wannee.jir@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	19 March 2018, Time 1.00-4.00 pm.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Discuss the most common specimen collection procedures 2. Discuss the importance of various specimen collection for patient care and satisfaction 3. Emphasize the importance of protecting yourself against exposure to blood-borne pathogens 4. Discuss how to interpret the laboratory result
7. Topic Detail	
	Specimen collection procedures, Protecting yourself against exposure to blood-borne pathogens, Interpret the laboratory result
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM2- Pathology of red and white blood cells
2. Name Lecturer	Dr. Niwat Kangwanransan
Education	Ph.D. (Medical Sciences)
Position	Lecturer
Contact	02-201-5576, niwat.kan@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	20 March 2018, Time 1.00-4.00 pm.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Discuss the morphology and normal value of red and white blood cells 2. Discuss the pathophysiology changes in the quantity of red and white blood cells 3. Discuss the abnormal morphology of red and white blood cells 4. Categorize and be able to discuss laboratory test procedures used in the diagnosis of red and white blood cell disorders
7. Topic Detail	
	Morphology and normal value, Pathophysiology changes in the quantity, Abnormal morphology of red and white blood cells, Laboratory test procedures used in the diagnosis of blood cell disorders
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM3- Complete blood count
2. Name Lecturer	Dr. Wannee Jiraungkoorskul
Education	Ph.D. (Biology)
Position	Associate Professor
Contact	02-201-5571, wannee.jir@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	26 March 2018, Time 1.00-4.00 pm.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Discuss the composition of blood 2. List the laboratory test procedures used in complete blood count 3. List the cause of abnormal complete blood count results
7. Topic Detail	
	Composition of blood, Laboratory test procedures used in complete blood count, Cause of abnormal results
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM4- Anemia / Thalassemia
2. Name Lecturer	Dr. Pornthip Chaichompoo
Education	Ph.D. (Immunology)
Position	Lecturer
Contact	02-201-5577, pornthip.chh@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	27 March 2018, Time 1.00-4.00 pm.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Define the definition of anemia and hemoglobinopathy. 2. Discuss the mechanism of host cell in anemia. 3. Organize and be able of discuss features of anemia in terms of clinical presentation, incidence, etiology and pathogenesis, morphologic classification, and laboratory diagnostic criteria in anemia. 4. Discuss laboratory test procedures used in the diagnosis of thalassemia.
7. Topic Detail	
	<ol style="list-style-type: none"> 1. Definition of anemia and hemoglobinopathy. 2. Structure of hemoglobin and the abnormal of hemoglobin. 3. Mechanism of host cell in anemia, Clinical presentation, incidence, etiology and pathogenesis, morphologic classification, laboratory diagnostic criteria in anemia. 4. Laboratory test procedures used in the diagnosis of thalassemia.
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Class activity, report and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM5- Leukemia
2. Name Lecturer	Dr. Witchuda Payuhakrit
Education	Ph.D. (Pathobiology)
Position	Lecturer
Contact	02-201-5572, witchuda.pay@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	2 April 2018, Time 1.00-4.00 pm.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Organize and be able to discuss general features of leukemia in terms of incidence, clinical presentation, morphology, laboratory diagnosis and clinical course prognosis 2. Describe the classification of leukemia
7. Topic Detail	
	General features of leukemia in terms of incidence, clinical presentation, morphology, laboratory diagnosis and clinical course prognosis, Classification of leukemia
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM6- Immunodiagnosis
2. Name Lecturer	Dr. Witchuda Payuhakrit
Education	Ph.D. (Pathobiology)
Position	Lecturer
Contact	02-201-5572, witchuda.pay@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	3 April 2018, Time 1.00-4.00 pm.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Discuss the definition of immunodiagnosis 2. Discuss the characteristics of antigen and antibody reactions 3. Discuss the specific characteristics of immunoassays 4. List the laboratory test procedures used in the antigen-antibodies reaction in terms of laboratory diagnosis, complication-clinical course
7. Topic Detail	
	Definition of immunodiagnosis, Characteristics of antigen and antibody reactions, Specific characteristics of immunoassays, Laboratory test procedures used in the antigen-antibodies reaction in terms of laboratory diagnosis, complication-clinical course
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM7- Body fluid examination
2. Name Lecturer	Dr. Wannee Jiraungkoorskul
Education	Ph.D. (Biology)
Position	Associate Professor
Contact	02-201-5571, wannee.jir@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	9 April 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. Discuss the definition and type of body fluid 2. Discuss the properly collected and laboratory procedures of body fluid analysis 3. List the cause of abnormal body fluid results
7. Topic Detail	
	Definition and type of body fluid, Collected body fluid, Cause of abnormal results
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM8- Urine analysis
2. Name Lecturer	Dr. Wannee Jiraungkoorskul
Education	Ph.D. (Biology)
Position	Associate Professor
Contact	02-201-5571, wannee.jir@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	9 April 2018, Time 1.00-4.00 pm.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Discuss the properly collected urine specimen 2. List and explain the physical and chemical urine analysis 3. Can be used and read the result from the reagent strips for urinalysis 4. List the cause of abnormal urine analysis results 5. Organize and be able to prepare the urine specimen for microscopic analysis
7. Topic Detail	
	Collected urine specimen, Physical and chemical urine analysis, Used and read the result from the reagent strips for urinalysis, Cause of abnormal results, Prepare the urine specimen for microscopic analysis
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM10- Renal function test
2. Name Lecturer	Somphong Narkpinit
Education	MD
Position	Lecturer
Contact	02-201-5550, sompong.nak@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	23 April 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. Discuss the definition and classification of renal function test 2. List the laboratory test procedures used in renal function test 3. List the cause of abnormal renal function results
7. Topic Detail	
	Definition and classification of renal function test, Laboratory test procedures used in renal function test, Cause of abnormal results
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM10- Lipid profile
2. Name Lecturer	Somphong Narkpinit
Education	MD
Position	Lecturer
Contact	02-201-5550, sompong.nak@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	23 April 2018, Time 1.00-4.00 pm.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Discuss the definition and classification of lipid profile 2. List the laboratory test procedures used in lipid profile 3. List the cause of abnormal lipid profile results
7. Topic Detail	
	Definition and classification of lipid profile, Laboratory test procedures used in lipid profile, Cause of abnormal results
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM11- Liver function test
2. Name Lecturer	Dr. Witchuda Payuhakrit
Education	Ph.D. (Pathobiology)
Position	Lecturer
Contact	02-201-5572, witchuda.pay@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	24 April 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. Discuss the definition and classification of liver function test 2. List the laboratory test procedures used in liver function test 3. List the cause of abnormal liver function results
7. Topic Detail	
	Definition and classification of liver function test, Laboratory test procedures used in liver function test, Cause of abnormal results
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM12- Tumor markers and Cytology
2. Name Lecturer	Dr. Prasit Suwannalert
Education	Ph.D. (Pathobiology)
Position	Assistant Professor
Contact	02-201-5558, prasit.suw@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	24 April 2018, Time 1.00-4.00 pm.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Describe the basic principles for tumor markers and cytology 2. Describe the interpretation of tumor marker levels 2. Describe cytological changes of cervical cancer 3. Discuss the correlation between clinical case study and laboratory test interpretation
7. Topic Detail	
	Basic principles for tumor markers and cytology, interpretation of tumor marker levels, cytological changes of cervical cancer, clinical case study and laboratory test interpretation
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Case study, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM13-14- Molecular diagnosis
2. Name Lecturer	Dr. Amornrat Naranuntarat Jensen
Education	Ph.D. (Toxicology)
Position	Assistant Professor
Contact	02-201-5579, amornrat.nar@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	1 May 2018, Time 9.00 am - 4.00 pm.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Explain basic principles of molecular diagnosis and different types of nucleic acid testing 2. Discuss examples of the applications for different types of nucleic acid testing
7. Topic Detail	
	<p>Basic principles of molecular diagnosis</p> <p>Types of nucleic acid testing and their applications</p> <ul style="list-style-type: none"> - Non-amplified methods - Amplified methods - Large-scale nucleic acid analysis
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018

Lesson Plan

1. Topic	LM15- Glucose Tolerance Test
2. Name Lecturer	Dr. Nisamanee Charoenchon
Education	Ph.D. (Medical Science)
Position	Lecturer
Contact	02-201-5573, nisamanee.cha@mahidol.ac.th
3. Course	Clinical Pathology (SCBM 343)
4. Programme Title	B.Sc. (Biomedical Science)
5. Date and Time	Wed 2 May 2018, Time 1.00-4.00 pm.
6. Topic Objective	At the completion of this unit the student will be able to
	<ol style="list-style-type: none"> 1. Define the definition and classification of diabetes. 2. Practice the test procedures used in glucose tolerance test in terms of laboratory diagnosis, complication-clinical course 3. Examine causes of abnormal results
7. Topic Detail	
	The definition and classification of diabetes; test procedures used in glucose tolerance test in terms of laboratory diagnosis, complication-clinical course and causes of abnormal results.
8. Learning Methods	Lecture, Laboratory and Self study
9. Teaching Media	Handout, Text book, Laboratory material and equipment
10. Teaching Equipment	Computer, LCD, Microscope
11. Examination and Evaluation	Post-test and examination in MCQ or short answer
12. Date of Improvement	13 March 2018