Peer Revision

Reviewers	University	Date of Revision
- Prof. Dawlat Salem	Cairo	10/12/2011
- Prof. Ahmad K. Mansur	Mansura	28/11/2011

Program Specification of Medical Doctorate Degree of Clinical and Chemical pathology

Sohag University **Faculty of Medicine**

A. Basic Information

1. Program title: Medical Doctorate degree in Clinical and Chemical Pathology
2. Program type: Single
3. Faculty: Faculty of Medicine
4. Department: Clinical and Chemical Pathology
5. Coordinator : Dr. Hasnaa AbulWafaa.
6. Ass. Co-coordinator: Dr.Elham Omar.
7. External evaluator: Prof. Osama Baker Sadek.
8. Last date of program specifications approval: Faculty council No. "317", decree No. "1533" dated 17/12/2018.

B. Professional Information

1. Program aims

The aim of this program is to provide the postgraduate with the advanced medical knowledge and skills essential for the mastery of practice of Clinical and Chemical Pathology and necessary to provide further training and practice in the field of Clinical and Chemical Pathology through providing:

1. Recent scientific knowledge essential for the mastery of practice of Clinical and Chemical Pathology according to the international standards.
2. Skills necessary for proper diagnosis and management of patients in the field of Clinical and Chemical Pathology including diagnostic, problem solving and decision making.
3. Ethical principles related to the practice in this specialty.
4. Active participation in community needs assessment and problems identification.
5. Maintenance of learning abilities necessary for continuous medical education
6. Upgrading research interest and abilities.

2. Attributes of the post graduate:

1. Efficient in carrying out the basics and methodologies of scientific research.
2. The continuous working to add new knowledge in the field of Clinical Pathology.
3. Applying the analytical course and critical appraisal of the knowledge in in haematological, chemical, bacteriological and immunological specialties and related fields.
4. Merging the Clinical and Chemical Pathology knowledge with the other related knowledge with conclusion and developing the relationships in between them.
5. Showing a deep awareness with the ongoing problems, theories, and advanced sciences in the specialty of Clinical Pathology.
6. Determination of the professional problems in the specialty of Clinical and Chemical Pathology and creating solutions for them.

Program Specification of Medical Doctorate Degree of Clinical and Chemical pathology

Sohag University **Faculty of Medicine**

A. Basic Information

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3. Faculty: Faculty of Medicine
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B. Professional Information

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1. Recent scientific knowledge essential for the mastery of practice of Clinical and Chemical Pathology according to the international standards.
2. Skills necessary for proper diagnosis and management of patients in the field of Clinical and Chemical Pathology including diagnostic, problem solving and decision making.
3. Ethical principles related to the practice in this specialty.
4. Active participation in community needs assessment and problems identification.
5. Maintenance of learning abilities necessary for continuous medical education
6. Upgrading research interest and abilities.

2. Attributes of the post graduate:

1. Efficient in carrying out the basics and methodologies of scientific research.
2. The continuous working to add new knowledge in the field of Clinical Pathology.
3. Applying the analytical course and critical appraisal of the knowledge in in haematological, chemical, bacteriological and immunological specialties and related fields.
4. Merging the Clinical and Chemical Pathology knowledge with the other related knowledge with conclusion and developing the relationships in between them.
5. Showing a deep awareness with the ongoing problems, theories, and advanced sciences in the specialty of Clinical Pathology.
6. Determination of the professional problems in the specialty of Clinical and Chemical Pathology and creating solutions for them.

7. Efficient in carrying out the professional skills in Clinical and Chemical Pathology specialties.
8. Using advanced suitable technologies which serves Clinical and Chemical Pathology practice.
9. Efficient communication and leadership of team work in Clinical and Chemical Pathology specialties.
10. Decision making through the available information.
11. Using the available resources efficiently and working to find new resources.
12. Awareness with his role in the development of the society and preserve environment.
13. Behaving in a way which reflects his credibility, accountability, and responsibility.
14. Keeping continuous self development and transfer his experiences and knowledge to others.

3. Intended learning outcomes (ILOs)

a) Knowledge and Understanding

By the end of the study of doctoral program in Clinical and Chemical Pathology the Graduate should be able to:

a1. Mention and enumerate the recent advances in the normal structure, function, growth and development of the organs related to the Clinical and Chemical Pathology specialty on the macro and micro levels.
a2. List the recent advances in the abnormal structure, function, growth and development of these organs and natural history of common diseases.
a3. Mention the recent advances in the causation of disease and disease pathogenesis.
a4. Enumerate the recent methods of promoting health and preventing illness.
a5. Illustrate the recent advances in the scientific methods of establishing disease causation.
a6. Enumerate recent advances in clinical picture and differential diagnosis of hematology specialty
a7. Define the recent advances diagnostic and laboratory techniques necessary to establish diagnosis of common illnesses.
a8. Describe recent advances methods/alternatives used for hematological diseases.
a9. Mention principles, methodologies, tools and ethics of scientific research and biostatistics .
a10. Mention the principles and fundamentals of ethics and legal aspects of professional practice in the field of Clinical pathology.
a11. Enumerate the principles and fundamentals of quality assurance of professional practice in the field of Clinical pathology.
a12. Mention the effect of professional practice on the environment and the methods of environmental development and maintenance.

b) Intellectual skills

By the end of the study of doctoral program in Clinical and Chemical Pathology the

Graduate should be able to:

b1. Interpret data acquired through history taking to reach a provisional diagnosis for hematological diseases.

b2. Select from different diagnostic alternative techniques the ones that help in reaching a final diagnosis for hematological problems.
b3. Conduct research studies that add to knowledge.
b4. Formulate scientific papers in the area of hematological specialty.
b5. Asses risk in professional practices in the field of hematological
b6. Plan to improve performance in the field of Clinical and Chemical Pathology
b7. Identify problems and find solutions based on the available data in hematological
b8. Have the ability to innovate nontraditional solutions to Clinical and Chemical Pathology problems
b9. Manage scientific discussion administration based on scientific evidences and proofs.
b10. Criticize researches related to hematological specialty.

c) Professional and Practical skills

By the end of the study of doctoral program in Clinical and Chemical Pathology and the Graduate should be able to:

c1. Perform physical examination of patients for all organs and structures related to hematological specialty.
c2. Collect the results of diagnostic procedures.
c3. Perform the diagnosis of hematological disease.
c4. Preserve the patients with life threatening conditions and initiate the proper management according to patient's needs.
c5. Design medical reports.
c6. Evaluate and develop methods and tools existing in the area of hematology specialty.
c7. Perform bone marrow to hematological diseases.
c8. Train junior staff through continuous medical education programs.
c9. Design new methods, tools and ways of professional practice.
c10. Perform recent advanced technological methods in professional practice
c11. Describe the basic and modern professional skills.

d) General and Transferable skills

By the end of the study of doctoral program in Clinical and Chemical Pathology the Graduate should be able to:

d1. Present reports in seminars effectively
d2. Use standard computer programs effectively
d3. Teach others and evaluate their performance.
d4. Assess himself and identify his personal learning needs.
d5. Use of different sources for information and knowledge.

d6. Work coherently and successfully as a part of team and team`s leadership.

d7. Manage scientific meetings according to the available time.

4. Academic standards

Sohag faculty of medicine adopted the general national academic reference standards (NARS) proved by the national authority for quality assurance and accreditation of education (NAQAAE) for postgraduate programs. This was approved by the Faculty Council decree No.6854, in its cession No, 177 Dated: 18/5/2009. Based on these NARS; Academic Reference Standards (ARS) were suggested for this program. These ARS were revised by external evaluator and approved by the Faculty Council decree No.7528, in its cession No.191 dated 15/3/2010. The adoption of NARS and the suggested ARS were approved by University council degree No 587, in its cession No.60. dated 26-12-2011.

5. Curriculum Structure and Contents

5.a- **Program duration**: **7 semester**

5.b- **Program structure**

5. b.i- Number of hours per week:

	Hours/week		
Subject	**Lectures**	**Practical**	**Clinical**
1ST PART			
Bio Statistics & Computer	2	1	
Research Methodology	2	1	
Primary medical report	1	1	
Clinical and Chemical Pathology Principles	6	-	
2ND PART			
(Clinical pathology)	**8**	**10.5**	

code	Item		No	%
b.i	Total credit hours	Compulsory	90	100
		Elective	0	0
		Optional	0	0
b.iii	credit hours of basic sciences courses		6	6.7
b.iv	credit hours of courses of social sciences and humanities		0	0
b.v	credit hours of specialized courses:		53	58.9
b.vi	credit hours of other course		8	8.9%
b.vii	Practical/Field Training		8	8.9%
b.viii	Program Levels (in credit-hours system): Level 1: 1st part Level 2: 2nd Part Level 3: Thesis		 14 53 15	 15.5 58.9 16.7

6. Program courses :7 courses are compulsory

5.1- Level of Program First part:

Semester…1…..

Compulsory

Course Title	Total No. of hours	No. of hours /week		Program ILOs Covered (By No.)
		Lect.	Lab.	
First part (14 credit hours)				
Biostatistics + computer	3hr credit	2hr	2hr	b1,b2,c6,d2,d5
Research methodology	3hr credit	2hr	2hr	a9,a10,b3,c4,c2, c10,d5,d6
Primary medical report	2hr credit	1hr	1hr	a1.a2,c2,c5,d1
Clinical and Chemical Pathology principles	6hr credit	6hr	---	a7,a8,b1.b4,b6
Second part (53 credit hours)				
Clinical Pathology	53hr credit	8hr	10.5	a1,a2,a3,a4,a5,a6,a7,a8,a9,a10,a11,a12,b2,b5,b7,b8,b9,b10,c1,c3,c4,7,c8,c9,c10,c11,d1,d3,d4,d7.

7. Program Admission Requirements

1I- General Requirements

- Candidate should have either MBBch degree from any Egyptian Faculty of Medicine or Equivalent Degree from Medical Schools abroad approved by the ministry of high Education.
- Candidate should know how to speak & write English well
- Candidate should have computer skills**.**
- Follow postgraduate bylaw Regulatory rules of Sohag Faculty of Medicine approved by the ministerial decree No. (44), dated 6/1/2010.

II- Specific Requirements

- Master degree in **Clinical and Chemical Pathology** with at least "Good Rank".

8. Regulations for Progression and Program Completion

Duration of program is 90 credit hours (≥7 semesters ≥3.5 years), starting from registration till acceptance of the thesis; divided to:

First Part: (14 Credit hours ≥6 months ≥1 semester):

- Program-related basic science, Research Methodology, Ethics & medical reports, Biostatistics and computer.
- At least six months after registration should pass before the student can ask for examination in the 1st part.
- Two sets of exams: 1st in October — 2nd in April after fulfillment of the credit hours.
- At least 60% of the written exam and 60% of the total oral and practical/clinical is needed to pass in each course.
- For the student to pass the first part exam, a score of at least 60% (Level D) in each course is needed.
- Those who fail in one course need to re-exam it only.
- GPA of ≥1.3 is needed to pass this level (semester).

Second Part: (53 Credit hours ≥24 months= 4 semesters):

- Program related specialized science of Clinical and Chemical Pathology courses. At least 24 months after passing the 1st part should pass before the student can ask for examination in the 2nd part.
- Fulfillment of the requirements in each course as described in the template and registered in the log book (8 Credit hours; with obtaining ≥75% of its mark) is a prerequisite for candidates to be assessed and undertake part 1 and part 2 examinations; the credit hours of the logbook are calculated as following:
  - Each Cr. Hr.= 60 working Hrs.
  - Logbook= 8 Cr. Hr. X 60 working Hrs = 480 Working Hrs.
  - Collection of working Hrs. is as following:

Activity		**Hrs**
Grand rounds	**اجتماع علمى موسع**	**٦**
Training courses	**دورات تدريبية**	**12/ day**
Conference attendance	**حضور مؤتمرات علمية** **داخلى** **خارجة**	 **١٢/day** **18/day**
Thesis discussion	**حضور مناقشات رسائل**	**٦**
Workshops	**حضور ورش عمل**	**١٢/day**
Journal club	**ندوة الدوريات الحديثة**	**٦**
Seminars	**لقاء علمى موسع**	**٦**
Morbidity and Mortality conference	**ندوة تحليل المخاطر المرضية أوالوفاة**	**٦**
Self education program	**برنامج التعليم الذاتى**	**٦**

- Two sets of exams: 1st in October - 2nd in April.
- At least 60% of the written exam is needed to be admitted to the oral and practical exams.
- 4 times of oral and practical exams are allowed before the student has to re-attend the written exam.

Third Part (Thesis) (15 Credit hours =24-48 months=4-8 semester):

- Documentation of the subject should not be delayed for > 1.5 years after registration.
- Could start after registration and should be completed, defended and accepted after passing the 2nd part final examination, after passing of at least 24 months after documentation of the subject of the thesis and after publishing of at least one paper from the thesis in a specialized peer-reviewed journal.
- Accepting the thesis is enough to pass this part.

9. Methods of student assessments:

Method of assessment	weight	The assessed ILOs
1-Research assignment		- General transferable skills, intellectual skills

2-Written Exams: -Short essay: 40% -structured questions: 25% -MCQs: 20% -Commentary, Problem solving: 15%	50%	- Knowledge - Knowledge - Knowledge, intellectual skills - Intellectual skills, General transferable skills
3-OSCE/ OSPE	50%	-Practical skills, intellectual skills, general transferable skills
4-Structured Oral Exams		- Knowledge, Intellectual skills, General transferable skills

Assessment schedule:

Part I:

- **Biostatistics & Computer**: Written Exam (2 hours) + Structured oral Exam+ OSPE
- **Research Methodology**: Written Exam (2 hours) + structured oral Exam+ OSPE
- **Primary medical reports**: Written Exam (2 hour) + Structured oral Exam+ OSPE
- **Clinical and Chemical Pathology and its subsidiaries**: Written Exam (2 hours) + structured oral Exam.

Part II:

- **Clinical and Chemical Pathology and its subsidiaries**:

Two Written Exams (3 hours for each) + OSCE + Structured oral Exam

10. **Evaluation of program**

Evaluator	Tool	Sample
1- Senior students	Questionnaire	6
2- Alumni	Questionnaire	3
3- Stakeholders (Employers)	Questionnaire	22
4-External Evaluator(s)-(External Examiner(s)	Reports	1
5- Other		

Course Specifications of Applied biostatistics (with computer use) in MD degree of clinical pathology

Sohag University **Faculty of Medicine**

1. **Program title** : MD degree in Clinical and Chemical Pathology
2. **Major/minor element of the program** : Minor
3. **Department offering the course**: Community Medicine Dep.
4. **Department offering the program**: Clinical and Chemical Pathology Department
5. **Academic year /level** : 1st part
6. Date of specification approval: Faculty council No. "317", decree No. "1533" dated 17/12/2018.

A. Basic Information

Title: MD degree in Clinical and Chemical Pathology Statistics and Computer use for health services

Code: COM 0504-300

Total Hours:

Title	Lectures	Practical/ surgical	Total	credit
Applied biostatistics	30	30	60	3

B. Professional Information

1. Overall Aims of Course

a. To influence the students to adopt an analytical thinking for evidence based medicine.

b. To use precisely the research methodology in researches and computer programs SPSS, Epi Info and Excel in data analysis.

2. Intended Learning Outcomes of Courses (ILOs)

a) Knowledge and understanding:

By the end of the course, the student is expected to be able to:

a1. Mention different programs of analysis of data and statistical packages

a2. Define the recent advances of sources of data and methods of collection.

a3. Summarize data, construct tables and graphs

a4. Calculate measures of central tendency and measures of dispersion

a5. Describe the normal curves and its uses

a6. Illustrate selected tests of significance and the inferences obtained from such tests

a7. Illustrate selected tests of significance for parametric and non parametric inferences

a8. Identify factor analysis and discrimination analysis.

b) Intellectual Skills

By the end of the course, the student is expected to be allowed to:

b1. understand how to collect and verify data from different sources

b2. Interpret data to diagnose prevalent problems clinical pathology

c) Professional and Practical Skills:

By the end of the course, the student is expected to practice the following:

c1. Perform recent advanced technological methods in collection, analysis and interpretation of data and in management of prevalent problems in clinical pathology

d) General and Transferable Skills:

By the end of the course, the student is expected to be able to:

d1. Use appropriate computer program packages.

d2. Use of different sources for information and knowledge about biostatistics.

3. Contents

Topic	No. of hours	Lecture	Tutorial/ Practical
Recent advances in collection, analysis and interpretation of data	6	3	3
-Details of Tests of significance: Proportion test	6	3	3
-Chi-square test	6	3	3
-Student T test	6	3	3
-Paired T test	6	3	3
-Correlation	4	2	2
-Regression	6	3	3
-ANOVA test	4	2	2
-Discrimination analysis	6	3	3
-Factor analysis	4	2	2
-Parametric and non parametric tests	6	3	3
Total	**60**	**30**	**30**
Total credit	**3**	**2**	**1**

4. Teaching and Learning Methods

4.1- Lectures

4.2- Practical sessions

4.3- Computer search assignments

4.4- Computer application

5. Student Assessment Methods

Method of assessment	The assessed ILOs
5.1- Observation of attendance and absenteeism.	- General transferable skills, intellectual skills
5.2-Written Exams:	- Knowledge
-Short essay: 40%	- Knowledge
-structured questions: 25%	- Knowledge, intellectual skills
-MCQs: 20%	- Intellectual skills, General transferable skills,
-Commentary, Problem solving: 15%	- Practical skills, intellectual skills
5.3-Structured Oral Exams	- Knowledge
5.4Computer search assignment	- general transferable skills, intellectual skills

Assessment Schedule

Assessment 1….Final written exam Week: 24
Assessment 2…..Final oral exam Week: 24
Assessment 3 Attendance and absenteeism throughout the course
Assessment 4 Computer search assignment performance throughout the course

Weighting of Assessments

Final-term written examination	50	%
Final oral Examination	50	%
Total	100	%

Formative only assessments: attendance and absenteeism and Computer search assignments performance.

6. List of References

6.1- Essential Books (Text Books)
- Kumar and Clarke Textbook of Medicine; Parveen Kumar and Richard Clark; Blackwell Science; 9th edition, 2018
-Hutchison's Clinical Methods; Robert Hutchison; Harry Rainy; 24st edition;2018

6.2- Recommended Books
- Goldman-Cecil Textbook of Medicine; 25th edition, 2018.
- Harrisson's principales of internal medicine , 20th edition, 2018.

6.3 Periodicals, Web Sites:
- WWW.American Heart Association. Com.
- WWW. American gastroenterology Association.com.
- WWW. Circulation.com.
- WWW. American Rheumatology Association.com.

7. Facilities Required for Teaching and Learning:

- Adequate conditioned space for staff and assistants.
- Adequate conditioned teaching facilities.
- Audiovisual Aids: Data show, overhead and slide projectors and their requirements

Course Coordinator: Dr/Foad Metry Atya

Head of Department: Prof/ Ahmed Fathy Hammed

Date: 18/12/2011, Revised:1/9/2012, Revised:1/12/2013, Revised:1/12/2018

Course Specifications of Research Methodology in MD degree in clinical pathology

Sohag university **Faculty of Medicine**

A. Basic Information

1. Program (s) on which the course is given: MD degree in Clinical and Chemical Pathology
2. Minor element of program
3. Department offering the program: clinical pathology
4. Department offering the course: public health and community medicine
5. Academic year / Level; 1st part
6. Date of specification approval: Faculty council No. "317", decree No. "1533" dated 17/12/2018.

Program title: Research Methodology for MD degree in clinical pathology.

Code: COM 0504-300

Title	Lectures	Practical/ surgical	Total	credit
research methodology	30	30	60	3

B. Professional Information

1. Overall Aims of Course

The aim of this course is to provide the postgraduate student with the advanced medical knowledge and skills essential for the mastery of practice of specialty and necessary to provide further training and practice in the field of Public health and Community Medicine through providing:

1. Recent scientific knowledge essential for the mastery of practice of Public Health and Community Medicine according to the international standards.
2. Skills necessary for preparing for proper diagnosis and management of community problems, skills for conducting and supervising researches on basic scientific methodology.
3. Ethical principles related to the practice in this specialty.
4. Active participation in community needs assessment and problems identification.
5. Maintenance of learning abilities necessary for continuous medical education.
6. Upgrading research interest and abilities.

2. Intended Learning Outcomes of Courses (ILOs)

a)Knowledge and understanding:

By the end of the course, the student is expected to be able to:

a1. Define the recent advances of screening tests pertinent to selected diseases and the at-risk approach in the application of screening tests.

a2. Explain the usefulness of screening tests, and calculate sensitivity, specificity, and predictive values.

a3. Describe the study design, uses, and limitations.

a4. Mention the recent advances of principles, methodologies, tools and ethics of scientific research.

a5. Explain the strategies and design of researches.

a6. Describe bias and confounding.

a7. Describe sampling techniques and list advantages of sampling

a8. Identify principles of evidence based medicine.

b) Intellectual Skills

By the end of the course, the student is expected to be able to:

b1. Conduct research studies that adds to knowledge.

b2. Formulate scientific papers in the area of public health and community medicine

b3. Innovate and create researches to find solutions to prevalent community health problems

b4. Criticize researches related to public health and community medicine

c) Professional and Practical Skills:

By the end of the course, the student is expected to be able to:

c1. Master the basic and modern professional skills in conducting researches in the area of public health and community medicine.

c2. Design new methods, tools and ways of conducting researches. .

d) General and Transferable Skills:

By the end of the course, the student is expected to be able to:

d1. Use of different sources for information and knowledge to serve research.

d2. Work coherently and successfully as a part of a team and team's leadership in conducting researches and field studies.

3. Contents

Topic	No. of hrs	Lecture	Tutorial/ Practical
Details of epidemiological studies (case control, cohort and cross sectional)	8	4	4
Clinical trials, Quasi experimental study	6	3	3
Bias and errors	6	3	3
Setting a hypothesis	6	3	3
Recent advances in screening	6	3	3
- Evidence – based Medicine: Concept and examples Applicability Scientific writing: A protocol A curriculum	 4 4 4 4	 2 2 2 2	 2 2 2 2
Setting an objective - Critical thinking	2 2	1 1	1 1
Formulation of papers	8	4	**4**
Total hours	**60**	**30**	**30**
Total Credit hours	**3**	**2**	**2**

4. **Teaching and Learning Methods**

4.1- Lectures.

4.2- Computer search assignments

5. **Student Assessment Methods**

Method of assessment	The assessed ILOs
5.1- Observation of attendance and absenteeism.	- General transferable skills, intellectual skills
5.2-Written Exams:	
-Short essay: 40%	- Knowledge
-structured questions: 25%	- Knowledge
-MCQs: 20%	- Knowledge, intellectual skills
-Commentary, Problem solving: 15%	- Intellectual skills, General transferable skills,
5.3-Structured Oral Exams	- Knowledge
5.4 Computer search assignment	- general transferable skills, intellectual skills

Assessment Schedule

Assessment Final written exam Week: 24

Assessment Final oral exam Week: 24

Assessment Attendance and absenteeism throughout the course

Assessment Computer search assignment performance throughout the course

Weighting of Assessments

Final-term written examination	50%
Final oral Examination	50%
Total	100%

Any formative only assessments Attendance and absenteeism throughout the course

Computer search assignment performance throughout the course

6. **List of References**

6.1- Essential Books (Text Books)

- Kumar and Clarke Textbook of Medicine; Parveen Kumar and Richard Clark; Blackwell Science; 9th edition, 2018

-Hutchison's Clinical Methods; Robert Hutchison; Harry Rainy; 24st edition;2018

6.2- Recommended Books

- Goldman-Cecil Textbook of Medicine; 25th edition, 2018.
- Harrisson’s principales of internal medicine , 20th edition, 2018.

6.3 Periodicals, Web Sites:

- WWW.American Heart Association. Com.
- WWW. American gastroenterology Association.com.
- WWW. Circulation.com.
- WWW. American Rheumatology Association.com.

7. Facilities Required for Teaching and Learning:

1-ADEQUATE INFRASTRUCTURE: including teaching places (teaching class, teaching halls, teaching laboratory), comfortable desks, good source of aeration, bathrooms, good illumination, and safety & security tools.

2- TEACHING TOOLS: including screens, computers including cd (rw), data shows, projectors, flip charts, white boards, video player, digital video camera, scanner, copier, color and laser printers.

Course Coordinator: Dr/Foad Metry Atya

Head of Department: Prof/ Ahmed Fathy Hamed

Date: 18/12/2011, Revised:1/9/2012, Revised:1/12/2013,Revised:1/12/2018

Course Specifications of Primary Medical Report in MD degree of clinical pathology

Sohag University **Faculty of Medicine**

1. Program title : MD degree in Clinical and Chemical Pathology
2. Major/minor element of the program: Minor
3. Department offering the course: Forensic medicine and toxicology
4. Department offering the program: Clinical and Chemical Pathology
5. Academic year /level : 1st part
6. Date of specification approval: Faculty council No. "317", decree No. "1533" dated 17/12/2018.

A. Basic Information

Title: Course Specifications of Primary medical report in MD degree of Clinical and Chemical Pathology

Code: FOR 0504-300

Total hours:

Title	lecture	practical	total	credit
Primary medical reports	**15**	**30**	**45**	**2**

B. Professional Information

1. Overall Aims of Course

By the end of the course the student should be able to have the have the professional knowledge about the basics and medico legal aspects of primary medical reports.

2. Intended Learning Outcomes of Courses (ILOs)

a- Knowledge and Understanding:

By the end of the course the student should be able to:

a1. Describe legal and ethical and medico-legal aspects of professional practice
a2. Demonstrate knowledge of toxin and poison
a3. Mention factors affecting toxicity
a4. Demonstrate knowledge of management of poisoning
a5. Demonstrate knowledge of diagnosis of poisoning and describe principles of Toxicological sampling
a6. Demonstrate knowledge of treatment of poisoning
a7. Explain how to write a toxicological report
a8. Explain how to write death certificate
a9. Demonstrate knowledge of permanent infirmity
a10. Demonstrate knowledge of obligation of physicians (towards patients, colleagues, community)
a11. Mention types and items of consent, and professional secrecy
a12. Mention types of malpractice, and items of medical responsibility

a13. Mention medico legal aspects of organ transplantation, intersexes states, euthanasia, assisted reproduction techniques
a14. Mention ethical considerations of medical research involving human objects
a15. Describe principles of toxicology of different types of poisonous substances and drugs which operate on human body including classification, mechanism of action, clinical features of toxicity, circumstances, diagnosis and clinical management

b- **Intellectual Skills**:

By the end of the course the student should have the ability to:

b1. Interpret data acquired through history taking and clinical examination to write medical report.
b2. Identify and solve clinical problems related to poisoning .

c- Professional and Practical Skills:

By the end of the course the student should have the ability to:

c1. Write and evaluate medical reports and death certificates.
c2. Use and evaluate diagnostic methods to prepare medical reports for the professional practice in pediatric problems.

d- General and Transferable Skills:

By the end of the course the student should have the ability to:

d1. Assess himself and identify his personal learning needs.
d2. Use of different sources of information and knowledge.
d3. Work coherently and successfully as a part of a team and team's leadership.

3. Contents

Topic	No. of hours	Lecture	practical
Definition of poison, classification of poison and factors that influence toxicity	5	2	3
Diagnosis & Management of poisoning including: respiratory support, circulatory support and neurological support	5	2	3
Toxicological sampling and permanent infirmity	5	2	3
How to write a toxicological report & How to write death certificate	5	2	3
Obligation of physicians (towards patients, colleagues, community)	5	2	3
Consent, and professional secrecy	5	2	3
Types of malpractice, and items of medical responsibility	5	1	4
Medicolegal aspects of organ transplantation, intersex states, euthanasia, assisted reproduction techniques	5	1	4
Ethical considerations of medical research involving human subjects	5	1	4
Total	**45**	**15**	**30**
Total credit hours	**2**	**1**	1

4. **Teaching and Learning Methods**

4.1- Lectures

4.2- assignments

5. **Student Assessment Methods**

Method of assessment	The assessed ILOs
5.1- Observation of attendance and absenteeism.	- General transferable skills, intellectual skills
5.3-Written Exam: -Short essay: 40% -structured questions: 25% -MCQs: 20% -Commentary, Problem solving: 15%	 - Knowledge - Knowledge - Knowledge, intellectual skills - Intellectual skills, General transferable skills,
5.4-Structured Oral Exam	- Knowledge, Intellectual skills, General transferable skills
5.6 Computer search assignment	-General transferable skills, intellectual skills

Assessment Schedule

Assessment 1…. Final written exam Week: 24

Assessment 2…..Final Structured Oral Exam Week: 24

Weighting of Assessments

- Final Written Examination 50%
- Structured Oral Examination. 50%

Total 100%

Formative only assessment: simple research assignment, attendance and absenteeism.

6. **List of References**

Essential books

Simpson's Forensic Medicine, 13th Edition, by Jason Payne-James, RichardJones,Steven B Karch,John Manlove. published by Hodder& Stoughton Ltd (2011).

Goldfrank'sToxicologic Emergencies, (9th ed.) by Lewis S. Nelson, Robert S. Hoffman, Mary Ann Howland, Neal A Lewin, Lewis R. Goldfrank, Neal E. Flomenbaum. Published by McGraw-Hill (2011)

Emergency Toxicology,Peter Viccellio,(2nded.) Published by Lippincott Williams & Wilkins (1998)

Recommended books

Medical ethics.(1997)Robert M Veatch. 2nd edition.Jones & Bartlett publishers

Periodicals and websites……etc.

Egyptian journals of forensic medicine and clinical toxicology

International journals of forensic medicine and clinical toxicology

www.sciencedirect.com

https://emedicine.medscape.com

https://www.ncbi.nlm.nih.gov/pmc/

7. **Facilities Required for Teaching and Learning:**

- Adequate conditioned space for staff and assistants.
- Adequate conditioned teaching facilities.
- Audiovisual Aids: Data show, overhead and slide projectors and their requirements

Course Coordinator: Dr/Soheir Ali Mohammed

Head of Department: Dr/ Soheir Ali Mohamed

Date: 18/12/2011, Revised:1/9/2012, Revised:1/12/2013, Revised:1/12/2018

Course Specifications of Clinical and Chemical Pathology principles in MD degree of clinical pathology

Sohag University **Faculty of Medicine**

1. Program title : MD degree in Clinical and Chemical Pathology
2. Major/minor element of the program: Minor
3. Department offering the course: Clinical and Chemical Pathology .
4. Department offering the program: Clinical and Chemical Pathology
5. Academic year /level : 1st part
6. Date of specification approval: Faculty council No. "317", decree No. "1533" dated 17/12/2018.

A. Basic Information

Title: Course Specifications of Clinical and Chemical Pathology principles in MD degree of Clinical and Chemical Pathology .

Code: CLI 0504-300

Title	Lectures	Clinical/ Tutorial	Total	Credit
Clinical and Chemical Pathology principles	90	--	90	6

B. Professional Information

1. **Overall Aims of Course**

   By the end of the course the student should be able to have the recent professional in the field Clinical and Chemical Pathology all over the world and particularly in Egypt, so to be able to efficiently protect, diagnose correctly.

2. **Intended Learning Outcomes of Courses (ILOs)**

a) Knowledge and understanding:

By the end of the course, the student is expected to be able to:

a1. Mention Theories, fundamentals and recent knowledge in the field of Clinical and Chemical Pathology specialty and related fields.

a2. Mention recent advances in the causation of Clinical and Chemical Pathology problems and their pathogenesis.

a3. Enumerate Methods of promoting laboratory tests and ther promoting

a4. The principles and fundamentals of quality of professional practice in the field of clinical pathology

a5. Enumerate recent advances in the common diagnostic and laboratory techniques

a6. The knowledge of the impact of professional practice on the environment and the methods of environmental development and maintenance.

a7. Describe recent advances, advantages, disadvantages, and complicatiion of clinical pathology.

a8. List the principles and fundamentals of quality assurance of professional practice in the field of Clinical pathology.

b) Intellectual Skills

By the end of the course, the student is expected to be allowed to:

b1. Interpret data acquired through history taking to reach a provisional diagnosis for hematological diseases.
b2. Select from different diagnostic alternatives the ones that help reaching a final diagnosis for hematological diseases.
b3. Formulation of scientific papers in the area of clinical pathology
b4. Risk assessment in professional practices in the field of clinical pathology.
b5. Plan to improve performance in the field of clinical pathology
b6. Identify Clinical and Chemical Pathology problems and find solutions.
b7. Have the ability to innovate nontraditional solutions to Clinical and Chemical Pathology problems
b8. Mange Scientific discussion based on scientific evidences and proofs. b.9 Criticize researches related to clinical pathology

c) Professional and Practical Skills:

By the end of the course, the student is expected to practice the following:

c1. Describe of the basic and modern professional skills in the area of Clinical and Chemical Pathology .
c2. Writ and evaluate laboratory reports.
c3. Evaluate and develop methods and tools existing in the area of Clinical and Chemical Pathology
c4. Train junior staff through continuous medical education programs.

d) General and Transferable Skills:

By the end of the course, the student is expected to be able to:

d1. Present reports in seminars effectively
d2. Teach others and evaluate their performance.
d3. Assess himself and identify his personal learning needs.
d4. Use of different sources for information and knowledge.
d5. Work coherently and successfully as a part of a team and team's leadership
d6. Manage scientific meetings according to the available time.

3. Contents

	Lectures	Topics	Practical
Haematology (Module)	13	25	-
Introduction	1	1	
Heamopiosis	1	2	
Anemias	1	2	
Acute leukemias	1	2	
Chronic leukemias	1	2	
Lymphoprolifrattive disorders	1	2	
Multiple myeloma	1	2	
Aplastic anemias	1	2	
Metabolic disorders	1	2	
Blood diseases of pregancy	1	2	
Lymphomas	1	2	
Heamostasis	1	2	
Blood banking	1	2	

Chemistry (Module)	12	**25**	
Carbohydrates	1	2	
proteins	1	2	
body fluids	1	2	
hormones	1	2	
Tumor markers	1	2	
lipids	1	2	
instruments	1	2	
kidney diseases	1	3	
electrolytes and blood gases	1	2	
liver diseases	1	2	
Gastric, pancreatic and intestinal function	1	2	
minerals and bone metabolism	1	2	
Microbiology (Module)	10	20	
Introduction of human microbiology	1	1	
Bacteria reproduction & Bacteria growth	1	2	
Bacteriophage	1	1	
Chemotherapy and bacterial resistance	1	2	
Mycobacterium	1	2	
Virology	1	2	
Mycology	1	3	
Clinical baterial disesaes & Clinical microbiology laboratory	1	3	
Mycoplasma and atypical pneumonia	1	2	
Pyrexia of unknown origin	1	2	
Immunology (Module)	11	20	
Introduction & Innate immunity	1	2	
Acquired immunity	1	2	
B and T Lymphocytes	2	3	
Natural killer cells	1	1	
Immune tolerance & Autoimmune disease & Graft and graft rejection	1	3	
MHC	1	1	
Complement system	1	2	
Hepatitis markers and HIV.	1	2	
Clinical laboratory immunology	1	2	
Vaccines	1	2	
Total	**90**	**90**	
Total credit hours	**٦**	**6**	

4. <u>Teaching methods:</u>

4.1. Lectures

5. Methods of Students assessment:

5.1. Final written exam, includes:

- Short assay (to assess knowledge and understanding)
- Commentary (to assess intellectual skills)

5.2. Final practical exam , includes:

- OSCE (to assess intellectual skills & practical and professional skills)

5.3. Final oral exam

- Structured oral exam (to assess knowledge and understanding)

Assessment Schedule

Method of assessment	The assessed ILOs
5.1- Observation of attendance and absenteeism.	- General transferable skills, intellectual skills
5.2-Written Exams:	- Knowledge
-Short essay: 40%	- Knowledge
-structured questions: 25%	- Knowledge, intellectual skills
-MCQs: 20%	- Intellectual skills, General transferable skills,
-Commentary, Problem solving: 15%	- Practical skills, intellectual skills
5.3-Structured Oral Exams	- Knowledge

Weighting of Assessments

Assessment 1	logbook	Formative
Assessment 2	Final written exam	50 %
Assessment 4	Final oral exam	20%
Total		100 %

Any formative only assessments: simple research assignment, Log book

Course Coordinator: Dr/ Lila Mohammed Yossef

Head of Department: Prof/ Hassnaa A. Aboelwafa

Date: 18/12/2011, Revised:1/9/2012, Revised:1/12/2013, Revised:1/12/2018

Course Specifications of Clinical and chemical pathology for MD degree in clinical pathology

Sohag University **Faculty of Medicine**

1- Program Title: MD degree in clinical pathology

2- Minor/major element of the program: Minor

3- Department offering the program: Clinical and Chemical Pathology Department

4- Department offering the course: Clinical and Chemical Pathology Department

5- Academic year/level: second part

6- Date of specification approval: Faculty council No. "317", decree No. "1533" dated 17/12/2018.

A. Basic Information

Title: Course Specifications of Clinical and chemical pathology for MD degree in clinical pathology

Code: CLI :0504-300

Total hours:

		Lectures	Practical	Clinical	Total	Credit hr
Haematology Chemistry Immunology Bacteriology	Main	255	360	---	615	29
	Subsidiaries	75	90	---	165	8
		75	90	---	165	8
		75	90	---	165	8
Total		480	630	---	1110	53

B. Professional Information

1. **Overall Aims of Course**

By the end of the course the student should be able to have the professional knowledge of the All haematological diseases affecting human beings all over the world and particularly in Egypt, so to be able to efficiently protect, diagnose correctly.

2. **Intended Learning Outcomes of Course (ILOs):**

According to the intended goals of the faculty: the student is to be armed with professional knowledge about clinical chemistry Egypt

Haematology Module

a) Knowledge and Understanding:

By the end of the course the student should be able to:

a1. Have the basic knowledge of the disease affecting human bone marrow and all blood elements.

a2. Have the ability to differentiate between different heamatological diseases.

a3. Have the knowledge to recognize the etiology, pathophysiology and clinical symptoms and signs of them.

a4. Have the knowledge of the recommended laboratory tests needed for diagnosis of each case.

a5. Have the knowledge of blood banking including instructions, precautions, hazards and all techniques used for blood transfusion, blood serology, bl. Compatibility tests, antibody screening and comb's tests.

b) Intellectual Skills:

By the end of the course the student should have the ability to:

b1. Use different laboratory methods to differentiate between the different haematological diseases.
b2. Differentiate between true and false laboratory results.
b3. Have ability to assess laboratory quality assurance.
b4. Have ability to interpret and correct deviant mechanical laboratory measurements.
b5. Interpret a wide variety of tests and cross correlate with other clinical data.

c) Professional and Practical Skills:

By the end of the course the student should have the ability to:

c1. Master the basic and modern professional clinical skills in the area of haematolog.
c2. Write and evaluate of medical reports.
c3. Initiate or implement laboratory tests
c4. Assess haematological diseases on morphological bases of blood films.
c5. Identify the methods of detection of haemostatic disorders.
c6. Identify the infective and the diagnostic stages of the disease
c7. Identify some stages of the disesae.
c8. Differentiate between true and false clinical laboratory hematological investigations in different samples.

d) General and Transferable Skills:

By the end of the course the student should have the ability to:

d1. Communicate effectively by different types of effective communication .
d2. Use appropriate computer program packages and the internet to serve the development of professional practice.
d3. Assess himself and identify his personal learning needs.
d4. Use of different sources for information and knowledge.
d5. Work coherently and successfully as a part of a team and team's leadership.
d6. Manage time effectively .
d7. Maintain Continuous self-learning.

Chemistry Module

a) Knowledge and Understanding:

By the end of the course the student should be able to:

a1. Have the basic knowledge of the disease affecting human body diseseases .
a2. Have the ability to differentiate between different disease by lab.investigations.
a3. Have the knowledge to recognize the clinical symptoms of them.
a4. Have the knowledge of the recommended laboratory tests needed for diagnosis of each case.
a5. Have the knowledge of instruments and instructions used for chemical analysis.
a6. Interpret a wide variety of tests and cross correlate with other clinical data.

b) Intellectual Skills:

By the end of the course the student should have the ability to:

b1. Differentiate between the different chemical changes in different diseases.

b2. Differentiate between the different types of disease causing different chemical changes.
b3. Determine the involvement of the chemical processes in the current disease process.
b4. Order a variety of specific tests.
b5. Interpret a wide variety of tests and cross correlate with other clinical data.

c) Professional and Practical Skills:

By the end of the course the student should have the ability to:

c1. Describe the basic and modern professional clinical skills in the area of chemical pathology.
c2. Write and evaluate of medical reports.
c3. Initiate or implement laboratory tests
c4. Evaluate and develop methods and tools existing in the area of chemical pathology.
c5. Use diagnostic technological methods to serve the professional practice in blood diseases problems.
c6. Design new methods, tools and ways of professional practice.
c7. Interpret results of blood gases and electrolytes analysers.
c8. Identify the methods of biochemical reactions (colorimetric, kinetics and ..etc.).
c9. Recognize chemical bases of different urine strips.

d) General and Transferable Skills:

By the end of the course the student should have the ability to:

d1. Communicate effectively by different types of effective communication .
d2. Use appropriate computer program packages and the internet to serve the development of professional practice.
d3. Assess himself and identify his personal learning needs.
d4. Use of different sources for information and knowledge.
d5. Work coherently and successfully as a part of a team and team's leadership.
d6. Manage time effectively .
d7. Maintain Continuous self-learning.

Immunology Module

a) Knowledge and Understanding:

By the end of the course the student should be able to:

a1. Have the basic knowledge of role of immunology in different human diseases.
a2. Have the ability to differentiate between different immunological investigations.
a3. Have the knowledge of antigen antibody reactions and its applications.
a4. Descripe the immunopathological background, clinical symptoms, complications and diagnostic criteria of each of autoimmune diseases.
a5. Summarize the immunological laboratory tests needed for diagnosis of each case.
a6. Perform basic and advanced immunology tests in the lab like DNA radioimmunoassay and immunefluorescent .

b) Intellectual Skills:

By the end of the course the student should have the ability to:

b1. Differentiate between the different immunological diseases
b2. Differentiate between the different types of disease causing immunolgical diseases

b3. Determine the involvement of the immune system in the current disease process.
b4. Order a variety of specific tests
b5. Interpret a wide variety of tests and cross correlate with other clinical data

c) Professional and Practical Skills:

By the end of the course the student should have the ability to:

c1. Initiate or implement laboratory tests
c2. Identify the infective and the diagnostic stages of the disease
c3. Identify some stages of the disesae.
c4. Mange all methods of different Ag-Ab. Reactions (like CRP, ASOT,ANA, LE cells, Rose waller, ANA-IF, anti- ds DNA Ab. (IF),…etc.)
c5. Recognize serological tests used in diagnosis.
c6. Differentiate between true and false clinical laboratory immunological investigations in different samples.

d) General and Transferable Skills:

By the end of the course the student should have the ability to:

d1. Communicate effectively by different types of effective communication .
d2. Use appropriate computer program packages and the internet to serve the development of professional practice.
d3. Assess himself and identify his personal learning needs.
d4. Use of different sources for information and knowledge.
d5. Work coherently and successfully as a part of a team and team's leadership.
d6. Manage time effectively .
d7. Maintain Continuous self-learning.

Bacteriology Module

a) Knowledge and Understanding:

By the end of the course the student should be able to:

a1. Describe the metabolism and genetics of organisms.
a2. Describe the pathology, clinical symptoms and complications of each disease.
a3. Summarize the laboratory tests needed for diagnosis of each case.
a4. Have the basic knowledge of the disease affecting human beings.
a5. Have the ability to differentiate between different bacteriological investigations.
a6. Have the knowledge to recognize the clinical symptoms of them.
a7. Have the knowledge of the recommended laboratory tests needed for diagnosis of each case.
a8. Have the knowledge of some of the drugs and instructions used for treating each case.
a9. Describe infection control methods.
a10. Perform basic and advanced microbiology tests in the lab

b) Intellectual Skills:

By the end of the course the student should have the ability to:

b1. Differentiate between the different microorganisms (Bacteria, viruses and fungi)
b2. Differentiate between the different types of disease causing microbes
b3. Determine the antibiotic regimen based on previous microbiological experience and laboratory tests.
b4. Determine the involvement of the immune system in the current disease process.
b5. Order a variety of specific tests
b6. Interpret a wide variety of tests and cross correlate with other clinical data
b7. Criticize researches related to hematological specialty.

c) Professional and Practical Skills:

By the end of the course the student should have the ability to:

c1. Identify the methods of staining, culturing and biochemical reactions
c2. Identify the methods of antibiotic sensitivity tests.
c3. Identify the methods of urinary bacterial count.
c4. Identify the methods of sterilization.
c5. Recognize some serological tests used in diagnosis Identify the infective and the diagnostic stages of the disease
c6. Identify some stages of the disesae.
c7. Differentiate between true and false clinical laboratory bacteriological investigations in different samples.

d) General and Transferable Skills:

By the end of the course the student should have the ability to:

d1. Communicate effectively by different types of effective communication .
d2. Use appropriate computer program packages and the internet to serve the development of professional practice.
d3. Assess himself and identify his personal learning needs.
d4. Use of different sources for information and knowledge.
d5. Work coherently and successfully as a part of a team and team's leadership.
d6. Manage time effectively .
d7. Maintain Continuous self-learning.

3. Contents

Curriculum structure

Main (29 credit hour) 16 lectures (240hrs) 13 practical (390 hrs)	Main (24 credit hour) 5 lectures (75 hrs) 3 practical (90 hrs)

Hematology (main)

	Lectures	No. of hours
Topics : (16 CREDIT = 240 hrs)		
- Haemopoiesis	1	2
(1) Haemotasis :	26	52
Normal haemostasis.		
- The vascular function of platelets.	1	2
- Normal thrombopoiesis.	3	6
- Normal coagulation Pathway.	2	4
- New theory of Coaulation	1	2
- Fibrinolysis system	2	4
Platelet disorders :		
- platelet function tests	2	4
- quantitative platelet disorders.	3	6
- Qualitative platelet disorders.	2	4
Coagulation disease :		
- haemophilia	2	4
- vWD:	2	4
- DIC	1	2
- thrombophilia : acquired & inherited	3	6
- Hemorrhagic disease of neonates	1	2
- Vitamin K deficiency.	1	2
(2) blood bank :	11	26
- Antigens in human blood	2	5
- Component of blood and preparation.	3	9
- Indication of transfusion.	1	2
- Hazards of transfusion. ٣٠	2	4
- Coomb's tests.	2	4

- haemolytic disease of newborn.	1	2
(3) Oncology :	24	43
- Granulopoiesis		
1. Myelopoiesis.	1	1
2. Lymphopoiesis.	1	1
3. Histocytic disorder.	1	1
4. Granulopoiesis disorders	1	2
5. Lysosomal storage disorders	1	1
- Acute leukaemia: AML & ALL	4	8
- Minimal residual disease in acute leukaemia	1	2
- Chronic leukaemia: CML & CLL	3	6
- MDS	2	4
- Myeloma	2	4
- Amyloidosis	1	2
- Myeloproliferative disorders	3	6
- lymphomas: Hodgkin and Non-Hodgkin	2	4
- Spleen	1	1
(4) RBCs :	32	52
- Erythropoiesis & haemopoietic GF.	2	4
- RBCs membrane structure.	1	3
- RBCs inclusion bodies.	1	2
- Anemia Classification & RBC indices.	2	4
- Iron metabolism, iron deficiency and disorders of haem synthesis.	2	4
- Iron overload.	1	2

- Sideroblastic anemia.	1	3
- Megaloblastic anemia & Pernicious anemia.	2	6
- **Types of haemolytic anemia :** 1. Intrinsic HA 2. Extrinsic HA	2	6
- Hereditary disorders of the red cell membrane	1	3
- Disorders of red cell metabolism	1	3
- Autoimmune haemolytic anemias	2	6
- Paroxysmal nocturnal haemoglobinuria	1	3
- HEMOGLOBINOPATHIES : The inherited disorders of globin synthesis.	3	6
- Thalassemia	4	12
- Sickle cell disease	2	5
- Aplastic anaemia/bone marrow failure syndromes (Inherited& acquired)	2	5
- Prophyria.	1	2
- Myelophthethic anemia & Diff. diagnosis	1	3
(5) Cytogenetics :	5	10
- Phyladelphia chromosome	2	4
- Cytogenetics of AML	1	2
- Cytogenetics of ALL	1	2
- Cytogenetics of Thalassemia	1	2
(6) Gene therapy	3	7
(7) Molecular diagnosis of haematological disorder :	5	10
(8) Stem cell transplantation and Tissue typing	4	8
Practical (13 CREDIT= 390 hrs)		
Lab rules, regulations, & Safety precautions, &	3	9

Blood smears		
Types & rules of use of tubes and lab. equipment	1	3
(1) Haemotasis :	18	54
Screening test		
1. Hess test (technique) 2. B.T. (methods) 3. Thrombin Time. 4. Fibrinogen. 5. PT, PTT (manual, semi-automated, full automated) 6. Platelet count.	7	21
Diagnosis of a case of DIC	1	3
Coagulation factor assay	3	9
Platelet function test and PF 100	3	9
Diagnosis of a case of bleeding tendency and method of correction	3	9
Diagnosis of a case of thrombophilia	2	6
(2) blood bank :	30	90
Blood transfusion rules, requirement and teqniques.	2	6
Donor requirement	1	3
Types of blood collecting bags.	2	6
Blood groups.	2	6
Reverse grouping.	1	3
Rh. phenotyping.	2	6
Method of blood group confirmation.	2	6
Rules of Blood transfusion	1	3
Rules of Plasma transfusion	1	3
Antibody screening tests.	1	3
Manual Compatibility tests.	1	3
Automated Compatibility tests.	2	6
Bl. separation.: manual &automated	4	12
WBCs depletion modalities	1	3
RBCs concentrate modalities	1	3
Cryoprecipitate separation.	1	3
Comb's test	2	6
Cryoglobulin test.	1	3
Plasmapharesis.	3	9
(3) Oncology :	33	99
Normal WBCs morphology& count.	2	6
WBCs differential count (Age adjusted)	2	6
Neutrophil: toxic gran.& shift to Lt.	1	3
Lymphocytes: reactive, atypical & abnormal.	1	3
BM aspiration sites & techniques.	3	9
BM aspiration biopsy techniques.	2	6
Normal BM morphology.	2	6

Leukaemoid reaction & NAP scoring	2	6
Peripheral haemogram and BM picture of:		
1. ALL	1	3
2. CLL	2	6
3. AML	1	3
4. CML	2	6
5. CMML	1	3
6. MDS	2	6
7. Myelproliferative disorders	2	6
8. Multiple myelomas & other gammaopathies	3	9
Cytochemical staining.	3	9
lipid storage disease	1	3
(4) RBCs :	37	111
Blood smearing & Staining	2	6
Manual WBC, RBCs, PLT count.	2	6
Retic count & normal blood morphology	2	6
Normal blood cells morphology	1	3
ESR and Hematocrit estimation	1	3
Method of stains preparation	2	6
Method of blood counting solutions preparation	2	6
Automated blood counters type, principles and type of device fallacies and method of correction	4	12
Peripheral haemogram and BM picture of:		
1. Iron deficiency anemia	1	3
2. Megaloblastic anemia	1	3
3. Thalassemia	2	6
4. Sickle cell	1	3
5. Aplastic anemia	2	6
6. Pure red cell aplasia	1	3
7. ITP	1	3

Myelophthethic anemia picture	3	9
Hb electrophoresis	3	9
Sickling test.	1	3
G6PD.	1	3
Iron & TIBC	1	3
O.F. test	2	6
Iron stain.	1	3
(5) Immunophenotyping :	7	21
Technique	3	9
Choosing panels and use in diagnosis	4	12

Haematology (for subsidiaries)

	Lectures	No. of hours
Topics : (5 CREDIT = 75 hrs)		
- Haemopoiesis	1	1
(1) Haemotasis :	14	22
Normal haemostasis.		
- The vascular function of platelets.	1	1
- Normal thrombopoiesis.	2	3
- Normal coagulation Pathway.	1	2
- New theory of Coagulation	1	1
- Fibrinolysis system	1	2
Platelet disorders :		
- Quantitative platelet disorders.	2	3
- Qualitative platelet disorders.	1	2
Coagulation disease :		
- Haemophilia.	1	2
- vWD	1	2
- DIC	1	**1**
- Thrombophilia : acquired & inherited	2	3
(2) blood bank :	6	9
- Antigens in human blood	1	2
- Component of blood and preparation.	1	2
- Indication of transfusion.	1	1
- Hazards of transfusion.	1	2
- Coomb's tests.	1	1
- haemolytic disease of newborn.	1	1
(3) Oncology :	11	19
Granulopoiesis		
1. Myelopoiesis.	1	1
2. Lymphopoiesis.	1	1
- Acute leukaemia: AML & ALL	2	4
- Chronic leukaemia: CML & CLL	2	4
- MDS	1	2
- Myeloma	1	2
- Myeloproliferative disorders	2	4
- Spleen	1	1

(4) RBCs :	14	24
- Erythropoiesis & haemopoietic GF.	1	1
- RBCs membrane structure.	1	1
- RBCs inclusion bodies.	1	1
- Anemia Classification & RBC indices.	1	1
- Iron metabolism, iron deficiency and disorders of haem synthesis.	1	2
- Sideroblastic anemia.	1	2
- Megaloblastic anemia & Pernicious anemia.	1	2
- Types of haemolytic anemia :	3	6
1. Intrinsic HA		
2. Extrinsic HA		
- HEMOGLOBINOPATHIES : The inherited disorders of globin synthesis.		
1. Thalassemia	2	4
2. Sickle cell disease	1	2
- Aplastic anaemia/bone marrow failure syndromes (Inherited& acquired)	1	2
Practical (3 CREDIT= 90 hrs)		
Lab rules, regulations, & Safety precautions, & Blood smears	1	3
(1) Haemotasis :	5	15
Screening test		
7. Hess test (technique) 8. B.T. (methods) 9. Thrombin Time. 10. Fibrinogen. 11. PT, PTT (manual, semi-automated, full automated) 12. platelet count)	2	6
Diagnosis of a case of DIC	1	3
Coagulation factor assay	2	6
(2) blood bank :	10	19
Blood transfusion requirement and techniques and Donor requirement.	2	4
Types of blood collecting bags.	1	2
Rh. phenotyping.	1	1
Method of blood group confirmation.	1	2
Rules of Blood &Plasma transfusion	1	2
Compatibility tests.	1	2
Bl. separation.: manual &automated	2	4
Comb's test	1	2
(3) Oncology :	10	20
WBCs differential count (Age adjusted)	1	2
BM aspiration sites & techniques.	1	2
Normal BM morphology.	1	2
Leukaemoid reaction & other benign pathological disorders	2	4

Leukaemias	2	4
Cytochemical staining.	1	2
Myelproliferative disorders	1	2
Multiple myeloma	1	2
(4) RBCs :	14	33
Blood smearing & Staining	1	2
Manual CBC counting.	1	2
ESR and Hematocrit estimation	1	2
Normal morphological assessment of CBC.	2	4
Automated blood counters type, principles and type of device fallacies and method of correction	1	2
Peripheral haemogram and BM picture of:		
8. Iron deficiency anemia	1	2
9. Megaloblastic anemia	1	2
10. Thalassemia	2	4
11. Sickle cell	1	2
12. Aplastic anemia	1	2
13. ITP	1	1
Hb electrophoresis	2	4
Sickling test.	1	2
O.F. test	1	2

Chemistry Module (for the main)

Topics	lecture	hrs	No.of lectures
1.Carbohydrates(20hr)	• Diabetes mellitus • Hypoglycemia • Ketone bodies • Lactate &pyruvate • Glycated proteins • Determination of glucose in body fluids • Inborn errors of carbohydrates metabolism	3 2 2 2 6 3 2	2 1 1 1 3 1 1
2.lipids(18hrs)	• Lipid chemistry • Lipoproteins • Apolipoprotein • Lipogram	3 6 3 6	1 2 1 2

3.Amino acids &proteins(24hrs)	• Clinical implication of amino acids • Analysis of amino acids • Inborn errors of amino acids metabolism • Plasma proteins • Immunoglobulins • Analysis of proteins	3 3 3 6 3 6	1 1 1 2 1 2
4.Hormones(18hrs)	• Hypothalamic hormones • Pituitary gland hormones • Thyroid gland hormones • Adernocortical hormones • Serotonin &carcinoid syndrome • Gastrointestinal hormones	3 3 3 3 3 3	1 1 1 1 1 1
5.Minerals &bone metabolism(18hrs)	• Calcium • Phosphate • Magnesium • Hormones regulating mineral metabolism • Metabolic bone diseases • Markers of bone turn over	3 3 3 3 3 3	1 1 1 1 1 1
6.Enzymes(18hrs)	• Muscle enzymes • Cardic markers • Liver enzymes • Pancreatic enzymes • Bone enzymes	3 3 6 3 3	1 1 2 1 1
7.Tumour markers(21hrs)	• Enzymes • Hormones • Oncofetal antigens • Carbohydrate marker • Blood group antigens • Others	6 3 3 3 3 3	1 2 1 1 1 1
8.Kidney function tests(21hrs)	• Creatinine • Urea • Uric acid • Ammonia • Diagnosis of kidney diseases urine analysis creatinine clearance proteinuria • Study of some kidney diseases	3 3 3 3 6 3	1 1 1 1 2 1

9.Liver diseases(19hrs)	• Anatomy &function of liver • Clinical manifestations of liver diseases • Liver diseases • Liver function tests	3 4 6 6	1 2 2 2
10.Electrolytes &blood gases(10hrs)		6	3
11.Body fluids analysis(12hrs)	• CSF • Serous –peritoneal fluid -pleural fluid	8 4	3 2
12.Instrumentation (41hrs)	• Electrophoresis -Types of electrophoresis -Hb electrophoresis -protein electrophoresis • Spectrometer • Dry reagent technology • Immunoassay • Immunoradiometric assay • Immunochemical methods • Nepholometry&turbidmetery • Flame photometry • Atomic absorption spectrophotometry • Fluorrometry&fluorometer • Chemiluminescence • PH meter • Ion selective electrodes • Chromatography	9 3 3 3 2 2 2 2 2 3 3 2 2 3	3 1 1 1 1 1 1 1 1 1 1 1 1 1
14.Gastric, pancreatic and intestinal function.		4	2

Practical course

13 credit hours(390 hrs)

Topics	hrs
1.Titration of solutions	15
2.Preparation of normal solutions	15
3.Preparation of molar solutions	15
4.Types of samples	10
5.Sampling technique	10
6.Estimation of glucose by spectrometery	15

7.Glucose curve	10
8.Kidney function test: -estimation of creatinine -estimation of urea -estimation of uric acid	 15 15 15
9.Liver function test -Liver enzymes -ALT -AST - Bilirubin -Total protein -Albumin -Albumin/globulin ratio -Alkaline phosphates	 15 15 15 15 15 - 15
10.Urine analysis • Chemical analysis -Glucose -ketone bodies -Protein -Bilirubin -Estimation of 24 hr urine protein -Detection of Bence Jonce protein • Microscopic examination	 10 10 10 10 10 10 10
11.Protein electrophoresis	30
12.CSF Examination • Chemical examination -Glucose -Protein • Microscopic examination	 10 10 15
14.Other body fluid examination -pleural fluid examination -peritoneal fluid examination	 10 10
15.Estimation of calcium	15

Chemistry Module (for the subsidiaries)

	Lectures	No. of hours
Topics : (75 hrs)		
1. Carbohydrates	3	6
2. proteins	4	8
3. body fluids	1	2
4. hormones	3	8

5. Tumor markers	2	4
6. lipids	2	4
7. instruments	4	12
8. kidney diseases	4	10
9. electrolytes and blood gases	1	3
10. liver diseases	**4**	10
11. gastric, pancreatic and intestinal function	1	2
12. minerals and bone metabolism	2	4
Practical (90 hrs)		
1. titration and preparation of normal solutions	5	10
2. glucose	2	5
3. kidney function tests : a. urea. b. creatinine. c. uric acid. d. urine examination	 4 4 4 3	30 8 8 8 6
4. liver function test : e. total protein f. Albumin g. bilirubin (total & direct) h. AST, ALT i. alkaline phosphatase (ALP)	 3 3 3 3 3	30 6 6 6 6 6
5. calcium	2	5
6. CSF, and other body fluids	2	5
7. protein electrophoresis	2	5

Immunology Module (for the <u>main</u>) Topics : (16 CREDIT = 240 hrs)

	Lectures	**No. of hours**
I- Introduction to Immunology		
1- General Properties of Immune Responses		10
Innate and Adaptive Immunity		2
Types of Adaptive Immune Responses		2
Cardinal Features of Adaptive Immune Responses		2
Cellular Components of the Adaptive Immune System		2
Overview of immune responses to microbes		2
2- Innate immunity		10
Features of innate immune recognition		3
Components of the innate immune system		4
Role of innate immunity in stimulating adaptive immune responses		3
3- Cells and Tissues of the Adaptive Immune System		6
Cells of the Adaptive Immune System		2
Anatomy and Functions of Lymphoid Tissues		2
Pathways and Mechanisms of Lymphocyte Recirculation and Homing		2
II- Recognition of Antigens		

4- Antibodies and Antigens		9
Natural Distribution and Production of Antibodies		2
Molecular Structure of Antibodies		3
Antibody Binding of Antigens		2
Structure-Function Relationships in Antibody Molecules		2
5- The Major Histocompatibility Complex		10
Discovery of the MHC and Its Role in Immune Responses		2
Structure of MHC Molecules		2
Binding of Peptides to MHC Molecules		2
Genomic Organization of the MHC		2
Expression of MHC Molecules		2
6- Antigen Processing and Presentation to T Lymphocytes		10
Properties of Antigens Recognized by T Lymphocytes		2
Antigen Presenting Cells		2
Cell Biology of Antigen Processing		2
Physiologic Significance of MHC-Associated Antigen Presentation		2
Presentation of Lipid Antigens by CD1 Molecules		2
7- Antigen Receptors and Accessory Molecules of T Lymphocytes		20
αβ TCR for MHC-Associated Peptide Antigen		3
CD3 and ζ Proteins of the TCR Complex		3
Antigen Receptors of γδ TCR		1
Antigen Receptors of NK-T Cells		2
Coreceptors and Costimulatory Receptors on T-Cells		2
CD4 and CD8: Coreceptors Involved in MHC-Restricted T Cell Activation		4
Costimulatory and Inhibitory Receptors of the CD28 Family		1
CD2 and the SLAM Family of Costimulatory Receptors		2
Other Accessory Molecules on T Cells		2
III- Maturation, Activation, and Regulation of Lymphocytes		
8- Lymphocyte Development And The Rearrangement and Expression of Antigen Receptor Genes		13
Overview of Lymphocyte Development		3
Rearrangement of Antigen Receptor Genes in B and T Lymphocytes		3
B Lymphocyte Development		3
Maturation of T Lymphocytes		4
9- Activation of T Lymphocytes		14
Overview of T Lymphocyte Activation		3
Activation of $CD4^+$ T Lymphocytes		2
Activation of $CD8^+$ T Cells		2
Role of Costimulators in T Cell Activation		2
Signal Transduction by the TCR Complex		3

T Cell Signal Attenuation: Roles of Inhibitory Receptors and Ubiquitin Ligases		2
10- B Cell Activation and Antibody Production		10
General Features of Humoral Immune Responses		2
Antigen Recognition and Antigen-Induced B Cell Activation		2
Helper T Cell-Dependent Antibody Responses to Protein Antigens		2
Antibody Responses to T Cell-Independent Antigens		2
Antibody Feedback: Regulation of Humoral Immune Responses by Fc Receptors		2
11- Immunologic Tolerance		14
General Features and Mechanisms of Immunologic Tolerance		4
T Lymphocyte Tolerance		3
B Lymphocyte Tolerance		2
Tolerance Induced by Foreign Protein Antigens		2
Homeostasis in the Immune System: Termination of Normal Immune Responses		3
IV- Effector Mechanisms of Immune Responses		
12- Cytokines		8
General Properties of Cytokines		2
Cytokines That Mediate and Regulate Innate Immunity		2
Cytokines That Mediate and Regulate Adaptive Immunity		2
Cytokines That Stimulate Hematopoiesis		2
13- Effector Mechanisms of Cell-Mediated Immunity		10
Types of Cell-Mediated Immune Reactions		3
Effector $CD4^+$ T Cells		2
Effector $CD8^+$ T Cells: Cytotoxic T-Lymphocytes		2
Memory T Cells		3
14- Effector Mechanisms of Humoral Immunity		10
Overview of Humoral Immunity		2
Neutralization of Microbes and Microbial Toxins		2
Antibody-Mediated Opsonization & Phagocytosis		2
The Complement System		2
Functions of Antibodies at Special Anatomic Sites (Mucosal Immunity & Neonatal Immunity)		2
V- Immunity in defense and Disease		
15- Immunity to Microbes		18
General Features of Immune Responses to Microbes		4
Immunity to Extracellular Bacteria		3
Immunity to Intracellular Bacteria		2
Immunity to Fungi		2

Immunity to Viruses		3
Immunity to Parasites		2
Strategies for vaccine Development		2
16- Transplantation Immunology		12
Immune Reponses to Allografts		2
Effector Mechanisms of Allograft Rejection		2
Prevention and Treatment of Allograft Rejection		2
Xenogeneic Transplantation		2
Blood Transfusion		2
Bone Marrow Transplantation		2
17- Immunity to Tumors		16
General Features of Tumor Immunity		3
Tumor Antigens		2
Immune Responses to Tumors		3
Evasion of Immune Responses by Tumors		4
Immunotherapy for Tumors		4
18- Diseases Caused by Immune Responses: Hypersensitivity and Autoimmunity		30
Causes and Types of Hypersensitivity Diseases		4
Effector Mechanisms of Immunologic Tissue Injury and Disease		2
Pathogenesis of Autoimmunity		4
Therapeutic Approaches for Immunologic Diseases		2
Respiratory Diseases		1
Rheumatic Diseases		5
Endocrine Diseases		2
Hematologic Diseases		3
Cardiac & Vascular Diseases		1
Gastrointestinal, Hepatobiliary, & Orodental Diseases		1
Renal Diseases		2
Dermatologic Diseases		1
Neurologic Diseases		1
Eye Diseases		1
19- Congenital and Acquired Immunodeficiencies		16
General Features of Immunodeficiency Diseases		4
Congenital (Primary) Immunodeficiencies		5
Acquired (Secondary) Immunodeficiencies		3
Human Immunodeficiency Virus and the Acquired Immunodeficiency Syndrome		4
Total hours		**240**

Practical: (13 credit hours = 390hrs)		
Antigen-Antibody reactions:		
A) Agglutination:		
I-Direct agglutination. II-Antiglobulin agglutination. III-Passive agglutination. IV-Haemagglutination.	12	36

B) Precipitation:		
1-Precipitaion in fluid. i. Turbidimetry. ii. Nephelometry.	6	18
2-Precipitaion in agar. I-Double diffusion. II-Single diffusion. III-Precipitation in agar with an electric field (Types of electrophoresis).	15	45
C) Complement fixation.	4	12
D) Immunofluorescence.	4	12
E) Enzyme-linked immunosorbent assay (ELISA).	7	21
F) Radioimmuno assay (RIA).	4	12
Molecular genetic techniques for clinical analysis of the immune system:		
1. Nucleic acid probes.	5	15
2. Hybridization assays.	7	21
3. Southern blot.	8	24
4. In situ hybridization.	5	15
5. Polymerase chain reaction.	10	30
Assessment of immune competence:		
I-Assessment of T-cell competence.	5	15
II-Assessment of B-cell competence.	5	15
III-Assessment of phagocytic fuctions.	5	15
IV-Assessment of complement.	5	15
Flow cytometry		
Flow cytometry	15	45
Diagnosis of hypersensitivity reactions:		
-Skin test. -Delayed hypersensitivity reactions. -Detection of food antigen.	8	24
Total		390

Immunology Module (for the subsidiary)

I- Introduction to Immunology	
1- General Properties of Immune Responses	2
2- Innate immunity	2
3- Cells and Tissues of the Adaptive Immune System	2
II- Recognition of Antigens	
4- Antibodies and Antigens	2
5- The Major Histocompatibility Complex	2
6- Antigen Processing and Presentation to T Lymphocytes	2
7- Antigen Receptors and Accessory Molecules of T Lymphocytes	2
Section III Maturation, Activation, and Regulation of Lymphocytes	
8- Lymphocyte Development And The Rearrangement and Expression of	2

Antigen Receptor Genes	
9- Activation of T Lymphocytes	3
10- B Cell Activation and Antibody Production	2
11- Immunologic Tolerance	
Section IV Effector Mechanisms of Immune Responses	
12- Cytokines	2
13- Effector Mechanisms of Cell-Mediated Immunity	2
14- Effector Mechanisms of Humoral Immunity	2
Section V Immunity in defense and Disease	
15- Immunity to Microbes	3
16- Transplantation Immunology	2
17- Immunity to Tumors	2
18- Diseases Caused by Immune Responses: Hypersensitivity and Autoimmunity	6
19- Congenital and Acquired Immunodeficiencies	3
Total hours	45

Practical (90 hrs)		
Clinical laboratory methods for detection of cellular immunity	2	5
Flow cytometer	1	3
Delayed hypersensitivity skin testing	1	2
Clinical laboratory methods for detection of Ag.& Ab.	4	15
Blood banking & immunohaematology	3	15
Molecular genetic techniques for analysis of immune system: Nucleic acid probe 1) Southern blot western blot 2) PCR, RTPCR 3) FISH technique 4)	 2 2 2 2	 10 5 5 5
Histocompatibility testing: Tissue typing 1) Cross matching 2) Cellular assays 3)	4	15
Lab. evaluation of immune competence	4	10

Microbiology Module (for the main)

TOPICS(=240 hour)		Lectures	Hours
I- Basic Bacteriology			
1	Structure of Bacterial Cells	2	4
2	and metabolismGrowth	2	4
3	Genetics	3	6
4	Bacteriophages	2	4
5	Classification of Medically Important Bacteria	1	2
6	Normal Flora	2	4

7	of bacterial diseasesPathogenesis	1	2
8	Host Defenses	1	2
9	Laboratory Diagnosis	2	4
10	Antimicrobial Drugs: Mechanism of Action	1	2
11	Antimicrobial Drugs: Resistance	2	4
12	Bacterial Vaccines	2	4
13	Sterilization & Disinfection	3	6
II- Clinical Bacteriology			
1	Gram-Positive Cocci	3	6
2	Gram-Negative Cocci	3	6
3	Introduction to Anaerobic Bacteria	2	4
4	Gram-Positive Rods	4	8
5	Gram-Negative Rods Related to the Enteric Tract	4	8
6	Gram-Negative Rods Related to the Respiratory Tract	3	6
7	Gram-Negative Rods Related to Animal Sources (Zoonotic Organisms)	2	4
8	Mycobacteria	4	8
9	Actinomycetes	1	2
10	Mycoplasmas	1	2
11	Spirochetes	2	4
12	Chlamydiae	1	2
13	Rickettsiae	2	2
14	Minor Bacterial Pathogens	2	4
III- Basic Virology			
1	properties of virusesGeneral	1	2
2	Structure	1	2
3	Replication	1	2
4	Genetics & Gene Therapy	2	4
5	Classification of Medically Important Viruses	1	2
6	Pathogenesis	1	2
7	Host Defenses	1	2
8	Laboratory Diagnosis	2	4
9	Antiviral Drugs	1	2
10	Viral Vaccines	1	2
IV- Clinical Virology			
1	DNA Enveloped Viruses	2	4

2	DNA Nonenveloped Viruses	2	4
3	RNA Enveloped Viruses	2	4
4	RNA Nonenveloped Viruses	2	4
5	Orthomyxoviruses	2	4
6	Paramyxoviruses and rubella virus	2	4
7	Rabies virus	1	2
8	Reoviruses	1	2
9	Hepatitis Viruses	3	6
10	Arboviruses	1	2
11	Tumor Viruses	1	2
12	Slow Viruses & Prions	1	2
13	Human Immunodeficiency Virus	2	4
14	Minor Viral Pathogens	1	2
V- Mycology			
1	Basic Mycology	2	4
2	Cutaneous & Subcutaneous Mycoses	2	4
3	Systemic Mycoses	2	4
4	Antifungal Drugs	1	2
5	Opportunistic Mycoses	1	2
VI- Applied microbiology			
1	acquired infectionsHospital	2	4
2	infectionsAnaerobic	2	4
3	tract infectionsUrinary	2	4
4	food poisoning Bacterial	1	2
5	Gastroenteritis	1	2
6	Meningitis	1	2
7	Pyrexia of unknown origin	1	2
8	Lower respiratory tract infections	2	4
9	respiratory tract infectionUpper	1	2
10	Bacteremia	1	2
11	transmitted diseases.Sexually	2	4
12	Milk Borne diseases	1	2
13	Organisms Transmitted Blood Trasfusion	1	2
14	Eye infections	1	2
15	warfare Biologic	1	2
TOTAL		120	240

Practical Microbiology =390 hour			
1	Safety guidelines	1	5
2	Microbiology equipment and materials	1	5
3	Collection, storage and transport of clinical samples	2	10
4	Microscopes , microscopic examination and smear preparation.	1	5
5	Stains and staining techniques	1	5
6	Preparation of gram stain	2	10
7	Technique of gram stain	2	10
8	Preparation of ZN stain	2	10
9	Technique of ZN stain	2	10
10	Sterilization techniques	3	15
11	Types of culture media	2	10
12	Preparation of Culture media	3	15
13	Culture methods	5	25
14	Anaerobic cultures	3	15
15	TB cultures	2	10
16	Blood culture	3	15
17	Preparation and examination of urine sample	2	10
18	Preparation and examination of stool sample	2	10
19	Preparation and examination of sputum sample	2	10
20	Preparation and examination of body fluids	2	10
21	Biochemical test for bacterial identification	2	10
22	Antibacterial susceptibility test	5	25
23	Determination of viable bacteria count	3	15
24	Isolation and identification of different types of bacteria	10	50
25	Serological tests	2	10
26	PCR	6	30
27	Mycology	4	20
28	Virology	3	15
Total		78	390

(For the subsidiary of microbiology)

TOPICS(75 hour)		Lectures	Hours
1	Normal Flora	1	2
2	of bacterial diseasesPathogenesis	1	2

3	of bacterial diseasesLaboratory Diagnosis	2	4
4	Antimicrobial Drugs: Mechanism of Action	1	2
5	Antimicrobial Drugs: Resistance	1	2
6	Vaccines	1	3
7	Sterilization & Disinfection	2	4
8	Gram-Positive Cocci	2	4
9	Gram-Negative Cocci	2	4
10	Gram-Positive Rods	2	4
11	Gram-Negative Rods	2	4
12	Mycobacteria	2	4
13	Spirochetes	1	2
14	Classification of Medically Important Viruses	1	2
15	Laboratory Diagnosis	2	4
16	Orthomyxoviruses	1	2
17	Hepatitis Viruses	1	2
18	Mycology	2	4
19	acquired infectionsHospital	1	2
20	infectionsAnaerobic	1	2
21	tract infectionsUrinary	1	2
22	Gastroenteritis	1	2
23	Meningitis	1	2
24	Pyrexia of unknown origin	1	2
25	Lower respiratory tract infections	1	2
26	respiratory tract infectionUpper	1	2
27	Bacteremia	1	2
28	transmitted diseases.Sexually	1	2
Total		37	75
Practical Microbiology =90 hour			
1	Safety guidelines	1	3
2	Microbiology equipment and materials	1	3
3	Collection, storage and transport of clinical samples	1	3
4	Microscopes , microscopic examination and smear preparation.	1	3
5	Stains and staining techniques	1	3
6	Technique of gram stain	1	3
7	Technique of ZN stain	1	3

8	Sterilization techniques	2	6
9	Types of culture media	2	6
10	Culture methods	3	9
11	Preparation and examination of urine sample	1	3
12	Preparation and examination of stool sample	1	3
13	Preparation and examination of sputum sample	2	6
14	Antibacterial susceptibility test	3	9
15	Determination of viable bacteria count	2	6
16	Isolation and identification of different types of bacteria	3	9
17	Serological tests	1	3
18	PCR	3	9
Total		30	90

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Department practical class
4.3- Practical lessons.

5. Student Assessment Methods

Method of assessment	The assessed ILOs
5.1- Observation of attendance and absenteeism.	- General transferable skills, intellectual skills
5.2-Written Exams:	- Knowledge
-Short essay: 40%	- Knowledge
-structured questions: 25%	- Knowledge, intellectual skills
-MCQs: 20%	- Intellectual skills, General transferable skills,
-Commentary, Problem solving: 15%	- Practical skills, intellectual skills
5.3-Structured Oral Exams	- Knowledge

Assessment Schedule

Assessment 1…Written exam-

Clinical and Chemical Pathology and its subsidiaries:

Two Written Exams (one for main and the other for subsidiaries)
(3 hours for each).

Assessment 2…Oral exam (Structured oral Exam)

Assessment 3…Practical exam (OSCE)

Weighting of Assessments

Written Examination 50%
Oral Examination & **OSCE**. 50 %

Total 100 %

6. List of References

6.1- **Essential Books (Text Books)**

Haematology module: Essential haematology & Atlas haematology
Chemistry module: Titze (Textbook).

Immunology module:

1) Roitt Essential Immunology.
2) Abbas Clinical Immunology
3) Alberts Molecular Biology

Bacteriology module: Jawetz Medical Microbiology.

6.2- **Recommended Books**

Haematology module: Post graduate Hamatology

Chemistry module Clinical chemistry Prof. Dr. Marshal et al (Textbook).

Immunology module:

1. A coloured Atlas of Microbiology.
2. Topley and Wilson, Microbiology

Bacteriology module :

1. A coloured Atlas of Microbiology.
2. Topley and Wilson, Microbiology

6.3- Periodicals, Web Sites, etc

Haematology module

1) Haematology (periodicals).
2) **British journal of hematology**: http://eu.wiley.com/WileyCDA/Section/id-351426.html
3) **American journal of hematology**: http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1096-8652

Chemistry module

1) Clinical chemistry
2) Immunology (periodicals).
3) http://mic.sgmjournals.org/

Immunology module

1) Microbiology (periodicals).
2) Immunology (periodicals).
3) http://mic.sgmjournals.org/

Bacteriology module

1) Microbiology (periodicals).

7. Facilities Required for teaching and learning.

1. Adequate infrastructure: including teaching places (teaching class, teaching halls, teaching laboratory), Comfortable desks, good source of aeration, bathrooms, good illumination, safety & Security tools.
2. Teaching Tools: including screens, Computer including cd(rw), data shows, Projectors, flip charts, white board, video player, digital video camera, Scanner, copier, colour and laser printers.
3. Computer Program: for designing and evaluating MCQs

Course Coordinator:

1. **Haematology module:** Dr/ Hasnaa Abulwafaa**.**
2. **Chemistry module**: Dr/ Elham Omar **.**
3. **Immunology module:** Dr/ Hydi .
4. **Bacteriology module:** Dr/Lila Muhammed**.**

Head of Department : Dr. Hasnaa Abulwafaa

Date: 18/12/2011, Revised:1/9/2012, Revised:1/12/2013, Revised:1/12/2018