Basic Chemical Pathology Course Specification
Master Degree in Clinical and Chemical Pathology

Program on which the course is given: Master of Clinical and Chemical Pathology
Department offering the program: Clinical and Chemical Pathology Department
Department offering the course: Clinical and Chemical Pathology Department
Course code: CCP822BCP
Element of the program (Compulsory/Elective): Compulsory course
Academic year: 2015-2016
Date of approval: July 2015
Credit points: 3 Credit points
Course duration: 11 weeks
Teaching hours: Theoretical 75% and Practical 25%
Course Coordinators:

- Prof. Dr. Lamia Mansour
- Assistant Prof. Dr. Heba El Baz

I. AIM OF COURSE

This course is designed to provide candidates with the necessary knowledge, skills and attitudes required to master the basics of Chemical Pathology.

II. INTENDED LEARNING OUTCOMES

A. Knowledge and Understanding:

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

1. Describe analytical methods and instrumentation used in the field of chemical pathology.
2. Explain the applications of basic statistical methods in laboratory medicine
3. Describe chemistry and metabolism of lipids, proteins and carbohydrates
4. Describe the nature of enzymes, their role in catalysis, factors affecting enzyme catalyzed reactions and levels of enzymes in blood
5. List the common pre-analytical variables affecting laboratory tests.

B. Intellectual Skills:

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

1. Compare between various laboratory techniques and instrumentations
2. Correlate protein, lipid and carbohydrate metabolism
3. Judge acceptability of control values
4. Comment on acceptability of method performance criteria

C. Professional and Practical Skills:

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

1. Use competently basic lab. Instrumentation such as photometers, centrifuges, pipettes, balances
2. Calculate control limits and construct control charts
3. Apply principles of quality control on daily, weekly and monthly basis
4. Take appropriate corrective action for unacceptable quality control results based on objective troubleshooting.
5. Apply method performance criteria in selection of instruments and methods

D. General and Transferable Skills:

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

1. Demonstrate competent use of information technology including word processing and statistical programs.

2. Apply principles of health and safety in the lab.
3. Enhance their knowledge and skills through adoption of life-long learning practices.

III. COURSE CONTENT

i. **Compulsory Course Basic Chemical Pathology**

ii. **Main topics: Students will receive presentations or group discussions about recent advances in the following subjects:**

Basic Laboratory Principles and Practices
1. Introduction to lab techniques
2. Laboratory basic principles and practices, overview
3. Pre-analytical variables
4. Predictive values of laboratory tests

Separative Techniques
1. Basic separation techniques
2. Electrophoresis
3. Chromatography and mass spectrometry

Spectroscopic Techniques
1. Introduction to spectroscopic techniques
2. Spectrophotometry
3. Atomic absorption/emission spectroscopy
4. Luminescence techniques
5. Turbidimetry and nephelometry
6. Reflectance spectroscopy

Other Techniques and Instruments
1. Electrochemical techniques
2. Osmometry
3. Measurement of radioactivity
4. Automation

Chemistry and Metabolism
1. Protein chemistry and metabolism
2. Carbohydrate chemistry and metabolism
3. Lipid chemistry and metabolism
4. General enzymology

Laboratory Management
1. Basic statistics
2. Total quality management
3. Evaluation of methods and Instruments

Immunochemical Techniques
1. Antibodies and passive immunodiffusion
2. Enhanced immunodiffusion
3. Indicator labelled immunoassay
4. IRIA and EIA
5. Luminescence immunoassay

iii. Course contents: Distribution of course contents

SUBJECTS	Lectures /tutorials (hrs)	Practical (hrs)	Total (hrs)	% of Total
1. Basic Laboratory Principles and Practices	3	7	10	16.1
2. Separative Techniques	5	-	5	8.0
3. Spectroscopic Techniques.	5	7	12	19.4
4. Other techniques and instruments	5	-	5	8.0
5. Chemistry and metabolism	12	-	12	19.4
6. Laboratory management	7	7	14	22.6
7. Immunochemical techniques	4	-	4	6.5
TOTAL	**41**	**21**	**62**	**100**

IV. TEACHING METHODS

The course will be deliveres through the following teaching methods:

- Lectures : two lectures (45 min each), 3 days a week covering all topics
- Practical classes with hands on training in Postgraduate Laboratory of Chemical Pathology Department

V. LIST OF REFERENCES

- Course notes
- Recommended text books
  1. Clinical Chemistry, Principles, Techniques and Correlations. ISBN-13: 978-1451118698, ISBN-10: 1451118694
  2. Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics. ISBN: 978-1-4557-4165

VI. TEACHING AND LEARNING FACILITIES

- Lecture hall provided with a white board.
- Audio-visual aids: data-show
- Postgraduate laboratory

VII. ASSESSMENT

Assessment criteria:

The prerequisite for sitting to the final exam is 75% attendance of the lectures and fulfilling all the credit points specified for the scientific activities, the training program and the elective course which should be registered in the log book.

Assessment tools:

- Continuous assessment is carried throughout the course and registered in the logbook
- Formative assessment : post course assessment exams on studied modules
- Final summative examination will be carried at the end of the course, and will include written, oral and practical exams.

Assessment schedule: The final exam is held twice per year in May and November.

- Day 1: written exam
- Day 2: practical exam
- Day 3: oral exam

Examination description:

- **Written exam**: Duration: 120 min. Format: MCQ and short essay question.
- **Oral exam:** student is examined by a board of 2-3 professors using viva cards
- **Practical Exam**

Weighing of assessment:

Exams	Marks	Intended Learning Outcomes
Written	80	A1 A2 A3 A4 A5 B1 B2 C3 C5
Oral	35	A1 A3 A4 B2 B4 C3 C5
Practical	35	B3 B4 C1 C4 D1 D2
Total	**150**	

Head of Department

Prof. Dr.Fatma El Mougy