إعتماد توصيف مقررات برنامج الدكتوراه فى الكيمياء الحيوية الطبية

نقر نحن الموقعون على هذا أدناه أن توصيف وثيقة البرنامج التعليمى لدرجة الدكتوراه فى الكيمياء الحيوية الطبية والمقررات الدراسية المكونة له قد تم وضعها بمعرفة الأقسام المعنية

م	اسم المقرر	اسم منسق المقرر	التوقيع	اسم رئيس القسم	التوقيع
١.	الاحصاء الطبي والكمبيوتر	د./ أحمد فتحي حامد		د./ ايمان عبد الباسط محمد	
٢.	أساليب البحث العلمي	د./ أحمد فتحي حامد		د./ ايمان عبد الباسط محمد	
٣.	Biochemistry of vision.	د./ رضا صلاح يوسف		د./ نجوي سيد أحمد	
٤.	Biochemistry of connective tissue.				
٥.	Biochemistry of liver.				
٦.	Biochemistry of muscle.				
٧.	Biochemistry of nervous tissue.				
٨.	Biochemistry of adipose tissue.				
٩.	الكيمياء الحيوية الطبية	د./ رضا صلاح يوسف		د./ نجوي سيد أحمد	

وكيل الكلية للدراسات العليا

عميد الكلية

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 Medical Biochemistry

Sohag University **Faculty of Medicine**

A. Basic Information

1. Program title: Medical Doctorate Degree of Medical Biochemistry
2. Program type: Multiple
3. Faculty: Faculty of Medicine
4. Department: Medical Biochemistry Department
5. Coordinator: Assistant Prof. Dr. Nagwa Sayed Ahmed
6. Assistant coordinator : Dr Samer Ahmed Alsawy
7. External evaluator: Prof. Dr Soad Mohamed Abdel Ghany Faid
8. Last date of program specifications approval: Faculty council No. "250", decree No. "1378" dated 28/12/2013.

B. Professional Information:

1. Program Aims:

The aim of the program is to provide the postgraduate with the advanced medical knowledge and skills essential for the mastery practice of specialty and necessary to provide further training and practice in the field of Medical Biochemistry through providing:

1. Recent scientific knowledge essential for the mastery of practice of Medical Biochemistry according to the international standards.
2. Skills necessary for proper applied diagnosis of some biochemical disorders.
3. Ethical principles related to the practice in this speciality.
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 advances in methodologies of scientific research in Medical Biochemistry.
2. The continuous working to add new knowledge in his field.
3. Applying the analytical course and critical appraisal of the knowledge in his specialty and related fields.
4. Merging the specialized 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 his specialty.
6. Determination of the professional problems and creating solutions for them.
7. Efficient in carrying out the professional skills in his specialty.
8. Using advanced suitable technologies which serves his practice.
9. Efficient communication and leadership of team work in his specialty.
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 Medical Biochemistry the Graduate should be able to know and understand each of:

a1. Describe sufficient knowledge of the Biochemistry structure of the different body tissues and organs.
a2. Describe the function of the different intermediary metabolism (anabolic and catabolic).
a3. Illustrate sufficient knowledge of molecular biology .
a4. Mention the biochemical importance of hormones, vitamins, minerals and enzymes integrating in the metabolism.
a5. Describe the biological transport and cell membrane and their biochemical, clinical and laboratory importance.
a6. Illustrate the importance and application of Clinical Biochemistry in diagnosis metabolic disorders.
a7. List the recent advances in biostatistics and computer..
a8. List the advanced knowledge of research methods.
a9. List the Principles, methodologies, tools and ethics of scientific research.
a10. Mention the principles and fundamentals of ethics and legal aspects of professional practice in the field of Medical Biochemistry.
a11. Mention the principles and fundamentals of quality assurance of professional practice in the field of Medical Biochemistry
a12. Mention the effect of the impact of professional practice on the environment and the methods of environmental development and maintenance

b) Intellectual Skills:

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

b1. Interpret basic biochemical and physiological facts with clinical data
b2. plan a general scheme to reach the correct diagnosis of metabolic disturbances.

b3. Select from the different diagnostic tools the one can help reaching a final solving of the problem in field of Medical Biochemistry
b4. Conduct research studies, that add to knowledge.
b5. Formulate scientific papers in the area of Medical Biochemistry.
b6. Assess risk in professional practices in the field of Medical Biochemistry
b7. Plann to improve performance in the field of Medical Biochemistry
b8. Identify biochemical problems and find solutions.
b9. Have the ability to innovate nontraditional Solutions to biochemical problems.
b10. Manage Scientific discussion administration based on scientific evidences and proofs
b11. Criticizes researches related to Medical Biochemistry.

c) Professional and Practical Skills:

By the end of the study of doctoral program in Medical Biochemistry the Graduate should be capable of:

c1. Mastery of the basic and modern professional skills in the area of Medical Biochemistry
c2. Writing and evaluation of medical reports.
c3. Evaluation and development of methods and tools existing in the area of Medical Biochemistry
c4. The use of technological methods to serve the professional practice.
c5. Planning for the development of professional practice and development of the performance of others.
c6. Orientation to develop new methods, tools and ways of professional practice.

d) General and Transferable Skills:

By the end of the study of doctoral program in Medical Biochemistry the Graduate should be able to:

d1. Do the different types of effective communication.
d2. Use information technology to serve the development of professional practice
d3. Teach others and evaluating their performance.
d4. Assess himself and identify of personal learning needs.
d5. To use of different sources for information and knowledge.
d6. Working in a team and team's leadership.
d7. Scientific meetings administration according to the available time.
d8. Use appropriate computer program packages.

4. Academic Standards:

Sohag Faculty of Medicine adopted the general National Academic Reference Standards (NARS) provided 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 evaluators and approved by the Faculty Council decree No.7538, 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.

1. External references for standards (Benchmarks): This program is designed to meet: The National Reference Academic Standards (NARS) standards based suggested ARS
2. Comparison of provision to selected external references:
   - Matching goals and Intended Learning Outcomes (ILOs).
   - Different requirements and program structure time table.
   - Absence of subspecialty programs.

5. Curriculum structure and contents:

5.a- Programme duration: 3.5 years. (7 semester)

5.b- Programme structure:

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

	hours /week		
Subject	Lectures	Practical	Clinical
First Part:			
Minors :			
Bio Statistics & Computer	2	2	
Research Methodology	2	2	
Optional courses: two of the followings:	----	----	
Biochemistry of vision.	4		
Biochemistry of connective tissue.	4		
Biochemistry of liver.	4		
Biochemistry of muscle.	4		
Biochemistry of nervous tissue.	4		
Biochemistry of adipose tissue.	4		
Second Part:			
Medical Biochemistry	7 h/w	12.5h	

code	Item		No	%
b.i	Total credit hours	Compulsory	82	91.2
		Elective	0	0
		Optional	8	8.8
b.iii	credit hours of basic sciences courses		8	8.8
b.iv	credit hours of courses of social sciences and humanities		0	0
b.v	credit hours of specialized courses:		53	58.8
b.vi	credit hours of other course		8	6.9
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 58.8 16.7

6. Program Courses * 3 courses are compulsory+2 optional courses

6.1- Level of program:

Semester…1…..

First part:

a. Compulsory

Course title	Total No. of hours credit hours	No of hours/week			Program ILOs. covered
		Lect.	practical	clinical.	
Biostatistics &computer and SPSS	3	2	2		a.7 - b1- c4 -d5-d8
Research Methodology	3	2	2		a8-a9- a12-b3-b4-b9-b11-c1-c6-d5-d6

b. Optional:

Course title	Total number of hours	No of hours/week			Program ILOs. covered
		Lect.	practical	clinical	
Biochemistry of vision	4	4			a.1-a2-a3-a5-a6-a10-b1-b3-b4-c5-c2-d1-d2-d3
Biochemistry of connective tissue	4	4			a.1-a2-a3-a5-a6-a10-b1-b3-b4-c5-c2-d1-d2-d3
Biochemistry of liver	4	4			a.1-a2-a3-a5-a6-a10-a11,b1-b3-b4-c5-c2-d1-d2-d3
Biochemistry of muscle	4	4			a.1-a2-a3-a5-a6-a10-a11,b1-b3-b4-c5-c2-d1-d2-d3
Biochemistry of nervous tissues	4	4			a.1-a2-a3-a5-a6-a10-a11,b1-b3-b4-c5-c2-d1-d2-d3
Biochemistry of adipose tissues	4	4			a.1-a2-a3-a5-a6-a10-b1-b3-b4-c5-c2-d1-d2-d3

Second Part:

Course title	No of hours credit hours	No of hours/week			Program ILOs. covered
		Lect.	practical.	clinical.	
Biochemistry	53	7	12.5		a.1-a.2-a.3-a4 a11-b.1-b.2-b.3-b.4-b.5-b.6-b.7 –b8-b9-b10 - c.2-c.3-c.4- -c.6- d1-d2- - d.3-d4-d.5-d.6-d.7

7. Program Admission Requirements

I- 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 Medical Biochemistry 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: (15 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: (50-60 Credit hours ≥24 months= 4 semesters):

- Program related specialized science of Medical Biochemistry 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	6
Training courses	دورات تدريبية	12/ day
Conference attendance	حضور مؤتمرات علمية داخلى خارجة	 12/day 18/day
Thesis discussion	حضور مناقشات رسائل	6
Workshops	حضور ورش عمل	12/day
Journal club	ندوة الدوريات الحديثة	6

Seminars	لقاء علمى موسع	6
Morbidity and Mortality conference	ندوة تحليل المخاطر المرضية أوالوفاة	6
Self education program	برنامج التعليم الذاتى	6

- 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 Assessment:

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- 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.
- Research Methodology: Written Exam (2 hours) + structured oral Exam.
- The first Optional course: Written Exam (3 hours) structured oral Exam .
- The Second Optional course: Written Exam (3 hours) structured oral Exam.

Part II:

- Biochemistry: Two Written Exams (3 hours for each) + Structured oral Exam + OSPE.

10. Program Evaluation:

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

Course Specifications of Biostatistics and Computer for MD Degree in Medical Biochemistry

Sohag University **Faculty of Medicine**

1.Program on which the course is given MD degree in Medical Biochemistry
2.Major or minor element of programs: minor
3.Department offering the program: Medical Biochemistry department
4.Department offering the course: Community Medicine and public Health Department.
5.Academic year/ first part
6.Date of specification approval: Faculty council No. "250", decree No. "1378" dated 28/12/2013

A. Basic Information

Title: Course Specifications of Biostatistics, computer in MD degree in Biochemistry
Cod: COM 0514-300

Title	Lecture	Practical	Total	Credit hours
Applied Biostatistics	30	30	60	**3**

B. Professional Information

1. Overall Aims of Course

To use precisely medical biostatistics and computer programs

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 the 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 in Medical Biochemistry

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 Medical Biochemistry

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 hours	**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 Exam: -Short essay: 40% -structured questions: 25% -MCQs: 20% -Commentary, Problem solving: 15%	 - Knowledge - Knowledge - Knowledge, intellectual skills - Intellectual skills, General transferable skills,
5.3-Structured Oral Exam	- Knowledge, Intellectual skills, General transferable skills
5.4 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
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 Structured Oral Exam	50	%
Total	100	%

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

6. List of References

6.1- Essential Books (Text Books)

1-Maxy-Rosenau Public health and preventive medicine, Prentice – Hall International Inc.2007

6.2- Recommended Books

1- Dimensions of Community Health, Boston Burr Ridge Dubuque. 2007

2- Short Textbook of preventive and social Medicine. Prentice-Hall **International** Inc.2010

3- Epidemiology in medical practice, 5th edition. Churchill Livingstone. New York, London and Tokyo.2002

6.3- Periodicals, Web Sites, … etc

1-American Journal of Epidemiology
2-British Journal of Epidemiology and Community Health
3- WWW. CDC and WHO sites

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 bathroom good illumination and safety &security tools
2. Teaching tools: including screens computers including cd (rw), data show, projector flip chart scanners
3. Computer program for designing &evaluation MCQ

Course Coordinator: Dr/Ahmed Fathy Hamed

Head of Department: Prof/Eman Abd El-Baset Mohammed

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

Course Specifications of Research Methodology for MD Degree in Medical Biochemistry

University Sohag **Faculty Medicine**

1. Program on which the course is given MD degree in Medical Biochemistry
2. Major or minor element of programs: Minor
3. Department offering the program: Medical Biochemistry department
4. Department offering the course: Community Medicine and public Health department
5. Academic year/ first part

7.Date of specification approval: Faculty council No. "250", decree No. "1378" dated 28/12/2013

A. Basic Information

Title: Course Specifications of Research methodology in MD degree in Biochemistry

Cod: COM - 0514-300

Title	Lecture	Practical	Total	Total credit hours
research methods	**30**	**30**	**60**	**3**

B. Professional Information

1- Overall Aims of Course

1- To influence the students to adopt an analytical thinking for evidence based medicine
2- To use precisely the research methodology in researches

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 Medical Biochemistry

b3. Innovate and create researches to find solutions to prevalent Medical Biochemistry problems

b4. Criticize researches related to Medical Biochemistry

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 Medical Biochemistry.

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 hours	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**
Formulation of papers	8	1	**1**
Total	**60**	**30**	**30**
Credit hours	**3**	**2**	**1**

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 Exam: -Short essay: 40% -structured questions: 25% -MCQs: 20% -Commentary, Problem solving: 15%	 - Knowledge - Knowledge - Knowledge, intellectual skills - Intellectual skills, General transferable skills,
5.3-Structured Oral Exam	- Knowledge, Intellectual skills, General transferable skills
5.4 Computer search assignment	-General transferable skills, intellectual skills

Assessment Schedule

Assessment 1Final written exam Week: 24
Assessment 2Final Structured 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 Structured Oral Exam	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)

1- Maxy-Rosenau Public health and preventive medicine, Prentice - Hall International Inc.2007

6.2- Recommended Books

1- Dimensions of Community Health, Boston Burr Ridge Dubuque. 2007
2- Short Textbook of preventive and social Medicine. Prentice-Hall International Inc.2010
3- Epidemiology in medical practice, 5th edition. Churchill Livingstone. New York, London and Tokyo.2002

6.3- Periodicals, Web Sites, … etc

1-American Journal of Epidemiology
2-British Journal of Epidemiology and Community Health
3- WWW. CDC and WHO sites

7- <u>Facilities required for teaching and learning</u>

1- Adequate infrastructure:
2- Including teaching places (teaching class, teaching halls, teaching laboratory), comfortable desks. good source of aeration bathroom good illumination and safety & security tools
3- Teaching tools: including screens computers including cd (rw), data show, projector flip chart scanners
4- Computer program for designing &evaluation MCQ

Course Coordinator: Dr/Ahmed Fathy Hamed

Head of Department: Prof/Eman Abd El-Baset Mohammed

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

Course Specifications of Biochemistry of Vision, liver ,connective tissue, adipose tissue, Nervous tissue and muscle for MD Degree in Medical Biochemistry

Sohag University **Facultyof Medicine**

1. Program on which the courses is given MD Degree in Medical Biochemistry
2. Major or minor element of program: minor
3. Department offering the program: Medical Biochemistry department
4. Department offering the courses: Medical Biochemistry department
5. Academic year/ first part

8.Date of specification approval: Faculty council No. "250", decree No. "1378" dated 28/12/2013

A. Basic Information

Title: Course Specifications of Biochemistry of vision in MD Degree in Biochemistry**.**

Cod: BIO- 0514-300

Title	Lecture	Practical	Total	Total credit hours
Biochemistry of vision	60		60	4
Biochemistry of Liver	60		60	4
Biochemistry of Connective Tissue	60		60	4
Biochemistry of Adipose Tissue	60		60	4
Biochemistry of Nervous Tissues	60		60	4
Biochemistry of Muscle	60		60	4

B. Professional Information

1. Overall Aims of Course

Biochemistry of Vision Module:

By the end of the course the post graduate students should be able to have the professional knowledge of the Biochemistry of vision and the role of the vitamin in eye .

Biochemistry of Liver Module :

By the end of the course the post graduate students should be able to have the professional knowledge of the biochemical role of the liver in metabolic reactions, disease related to it and able to diagnose by knowing the liver enzymes**.**

Biochemistry of Connective Tissue Module:

By the end of the course the post graduate students should be able to have the professional knowledge of the biochemical role of the extra cellular matrix bimolecular disease related to it and able to diagnose .

Biochemistry of Adipose Tissue Module:

By the end of the course the post graduate students should be able to have the professional knowledge of the biochemical role of the adipose tissues in metabolic reactions and diseases related to it and able to diagnose

Biochemistry of Nervous Tissues Module:

By the end of the course the post graduate students should be able to have the professional knowledge of the biochemical role of the central nervous system in metabolic reactions, disease related to it and able to diagnose**.**

Biochemistry of Muscle Module:

By the end of the course the post graduate students should be able to have the professional knowledge of the biochemical role of the proteins and ca+2 in muscular contraction ,disease related to it and able to diagnose**.**

2. Intended Learning Outcomes of Courses (ILOs

Biochemistry of Vision Module

a) Knowledge and understanding:

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

a1. Describe sufficient knowledge of the Biochemistry structure of the different body tissues and organs.

a2. Describe the function of the different intermediary metabolism (anabolic and catabolic).

a3. Describe the biological transport and cell membrane and their biochemical, clinical and laboratory importance.

a4. Illustrate the importance and application of clinical Biochemistry in diagnosis metabolic disorders in eye disease

b) Intellectual Skills

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

b1. Interpret basic biochemical and physiological facts with clinical data

b2. b.2 plan a general scheme to reach the correct diagnosis of metabolic disturbances.

b3. Select from the different diagnostic tools the one can help reaching a final solving of the problem in field of Medical Biochemistry

b4. Identify biochemical problems and find solutions

b5. Have the ability to innovate non traditional Solutions to biochemical problems.

c) Professional and Practical Skills:

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

c1. Mastery of the basic and modern professional skills in the area of Medical Biochemistry

c2. Writing and evaluation of medical reports. Conduct researches

c3. Evaluation and development of methods and tools existing in the area of Medical Biochemistry.

c4. Detect association and causation

d) General and Transferable Skills:

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

d1. Use information technology to serve the development of professional practice
d2. Assess himself/herself and identify of personal learning needs.
d3. To use of different sources for information and knowledge.
d4. Working in a team and team's leadership.
d5. Scientific meetings administration according to the available time.

Biochemistry of Liver Module:

a) Knowledge and understanding:

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

a1. Describe sufficient knowledge of the Biochemistry structure of the different body tissues and organs.

a2. Describe the function of the different intermediary metabolism (anabolic and catabolic).

a3. Describe the biological transport and cell membrane and their biochemical, clinical and laboratory importance.

a4. Illustrate the importance and application of clinical Biochemistry in diagnosis metabolic disorders in liver disease

b) Intellectual Skills

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

b1. Interpret basic biochemical and physiological facts with clinical data
b2. plan a general scheme to reach the correct diagnosis of metabolic disturbances.
b3. b.3 Select from the different diagnostic tools the one can help reaching a final solving of the problem in field of Medical Biochemistry
b4. Identify biochemical problems and find solutions
b5. Have the ability to innovate non traditional Solutions to biochemical problems.

c) Professional and Practical Skills:

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

c1. Mastery of the basic and modern professional skills in the area of Medical Biochemistry
c2. Writing and evaluation of medical reports. Conduct researches
c3. Evaluation and development of methods and tools existing in the area of Medical Biochemistry.
c4. Detect association and causation

d) General and Transferable Skills:

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

d1. Use information technology to serve the development of professional practice
d2. Assess himself/herself and identify of personal learning needs.
d3. To use of different sources for information and knowledge.
d4. Working in a team and team's leadership.

d5. Scientific meetings administration according to the available time.

Biochemistry of Connective Tissue Module:

a) Knowledge and Understanding:

a1. To know the biochemical importance of intermediary metabolism (Anabolic and catabolic)
a2. The importance of clinical Biochemistry
a3. Explain the role of extra cellular matrix bi-molecules in metabolic reactions
a4. To know and explain the disease related to the connective tissue.

b) Intellectual Skills

b1. Diagnosis the affected biochemical deficiency
b2. Integrate basic biochemical and physiological facts with clinical data
b3. How to diagnose and treat as early as possible
b4. Usage of early diagnosing biomarkers

c) Professional and Practical Skills

c1. To identify the biochemical defect
c2. To perform some laboratory tests for early diagnosis.
c3. To be able to write laboratory report and other scientific writing (article, review or thesis).

d) General and Transferable Skills

d1. Acquiring skills to use computer to enter Biochemistry web sites and self learning.
d2. Team working for accurate diagnosing of diseases using internet.
d3. Ability to listen and understand any biochemical lecture.
d4. Utilize computers in conducting research and to collect scientific data.
d5. Use standard computer programs effectively (window, office programs).
d6. **Acquiring skills for self learning**
d7. **Ability to interact (questioning and commenting) in a biochemical atmosphere (seminar, lecture or conference)**

Biochemistry of Adipose Tissue Module s:

a) Knowledge and understanding:

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

a1. Describe sufficient knowledge of the Biochemistry structure of the different body tissues and organs.

a2. Describe the function of the different intermediary metabolism (anabolic and catabolic).

a3. Describe the biological transport and cell membrane and their biochemical, clinical and laboratory importance.

a4. Illustrate the importance and application of clinical Biochemistry in diagnosis metabolic disorders in adipose tissues disease

a5. Mention the principles and fundamentals of quality assurance of professional practice in the field of Medical Biochemistry

b) Intellectual Skills

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

b1. Interpret basic biochemical and physiological facts with clinical data
b2. Plan a general scheme to reach the correct diagnosis of metabolic disturbances.
b3. Select from the different diagnostic tools the one can help reaching a final solving of the problem in field of Medical Biochemistry
b4. Identify biochemical problems and find solutions
b5. Have the ability to innovate non traditional Solutions to biochemical problems.

c) Professional and Practical Skills:

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

c1. Enumerate of the basic and modern professional skills in the area of Medical Biochemistry

c2. Writing and evaluation of medical reports. Conduct researches

c3. Evaluation and development of methods and tools existing in the area of Medical Biochemistry.

c4. Detect association and causation

d) General and Transferable Skills:

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

d1. Use information technology to serve the development of professional practice

d2. Assess himself/herself and identify of personal learning needs.

d3. To use of different sources for information and knowledge.

d4. Working in a team and team's leadership.

d5. Scientific meetings administration according to the available time.

<u>Biochemistry of Nervous Tissues Module</u>:

a) Knowledge and understanding:

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

a1. Describe sufficient knowledge of the Biochemistry structure of the different body tissues and organs.

a2. Describe the function of the different intermediary metabolism (anabolic and catabolic).

a3. Describe the biological transport and cell membrane and their biochemical, clinical and laboratory importance.

a4. Illustrate the importance and application of clinical Biochemistry in diagnosis metabolic disorders in nervous tissues disease

a5. Enumerate the principles and fundamentals of quality assurance of professional practice in the field of Medical Biochemistry

b) Intellectual Skills

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

b1. Interpret basic biochemical and physiological facts with clinical data

b2. plan a general scheme to reach the correct diagnosis of metabolic disturbances.

b3. Select from the different diagnostic tools the one can help reaching a final solving of the problem in field of Medical Biochemistry

b4. Identify biochemical problems and find solutions

b5. Have the ability to innovate non traditional Solutions to biochemical problems.

c) Professional and Practical Skills:

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

c1. Mastery of the basic and modern professional skills in the area of Medical Biochemistry

c2. Writing and evaluation of medical reports. Conduct researches

c3. Evaluation and development of methods and tools existing in the area of Medical Biochemistry.
c4. Detect association and causation.

d) General and Transferable Skills:

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

d1. Use information technology to serve the development of professional practice
d2. Assess himself/ herself and identify of personal learning needs.
d3. To use of different sources for information and knowledge.
d4. Working in a team and team's leadership.
d5. Scientific meetings administration according to the available time.

Biochemistry of Muscle Module:

a) Knowledge and understanding:

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

a1. Describe sufficient knowledge of the Biochemistry structure of the different body tissues and organs.

a2. Describe the function of the different intermediary metabolism (anabolic and catabolic).

a3. Describe the biological transport and cell membrane and their biochemical, clinical and laboratory importance.

a4. Illustrate the importance and application of clinical Biochemistry in diagnosis metabolic disorders in muscle disease

a5. Mention the principles and fundamentals of quality assurance of professional practice in the field of Medical Biochemistry

b) Intellectual Skills

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

b1. Interpret basic biochemical and physiological facts with clinical data
b2. plan a general scheme to reach the correct diagnosis of metabolic disturbances.
b3. Select from the different diagnostic tools the one can help reaching a final solving of the problem in field of Medical Biochemistry
b4. Identify biochemical problems and find solutions
b5. Have the ability to innovate non traditional Solutions to biochemical problems.

c) Professional and Practical Skills:

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

c1. Mastery of the basic and modern professional skills in the area of Medical Biochemistry
c2. Writing and evaluation of medical reports. Conduct researches
c3. Evaluation and development of methods and tools existing in the area of Medical Biochemistry.
c4. Detect association and causation

d) General and Transferable Skills:

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

d1. Use information technology to serve the development of professional practice
d2. Assess himself/herself and identify of personal learning needs.
d3. To use of different sources for information and knowledge.

d4. Working in a team and team's leadership.
d5. Scientific meetings administration according to the available time.

3. Contents

Biochemistry of Vision Module

Topic	No of hours	Lectures	practical
Role of the vitamin in the eye	1	1	
Vitreous content	2	2	
Pigmentations	1	1	
Receptors of retina	2.5	2.5	
Biochemistry of eye drops	2	2	
Diseases related to the eye	2.5	2.5	
Tumour markers related to the eye	2.5	2.5	
Growth factor	2	2	
-Quality assurance of the research and clinical investigations.	5	5	
-Basic concepts and applications of electrophoresis.	5	5	
-Basic concepts and applications of centrifugation.	5	5	
Basic concepts and applications of chromatography.	5	5	
-Basic concepts and applications of spectroscopy.	5	5	
-Basic concepts and applications of protein separation	5	5	
-liver function tests	5	5	
-Adhesion molecules and mechanisms.	5	5	
-Biomedical importance (tumor markers , enzymes, growth factors) and disease implication	5	5	
Total	**60**	**60**	
Credit	**4**	**4**	

Biochemistry of Liver Module:

Topics	Total no of hours	lectures	practical
Role of the liver in the all metabolic reactions (anabolic and catabolic)	5	5	
liver functions tests	2	2	
Proteins synthesized in the liver.	2	2	
Porphyrin metabolism and Hemoglobin metabolism (anabolic and catabolic)	2	2	
Fatty liver	2	2	
Diseases related to the liver	2	2	

Biochemistry of liver fibrosis and cirrhosis.	2	2	
Glycoproteins	2	2	
Tumor markers related to the liver	2	2	
Growth factor	2	2	
Metabolism of xenobiotics	2	2	
Practical	5	5	
-Quality assurance of the research and clinical investigations.	5	5	
-Basic concepts and applications of electrophoresis.	5	5	
-Basic concepts and applications of centrifugation.	5	5	
Basic concepts and applications of chromatography.	5	5	
-Basic concepts and applications of spectroscopy.	5	5	
-Basic concepts and applications of protein separation	5	5	
-liver function tests	5	5	
-Adhesion molecules and mechanisms.	5	5	
Biomedical importance(tumor markers , enzymes, growth factors) and disease implication	5	5	
Total	**60**	**60**	
Credit	**4**	**4**	

Biochemistry of Connective Tissue Module:

Topics	Total no of hours	lectures	practical
Collagen	5	5	---
Biochemical connective tissues tests	2	2	---
Proteoglycans and Glycosaminoglycans	2	2	---
The major bases of the chondrodysplasias including mutations in genes encoding	2	2	---
Metabolic and genetic disorders involve bone	2	2	---
Diseases related to the connective tissues	2	2	---
Tumor markers related to the liver	2	2	---
Growth factor	2	2	---
Biomedical importance(tumor markers, enzymes, growth factors) and disease implication	3	3	---
-Quality assurance of the research and clinical investigations.	5	5	
-Basic concepts and applications of electrophoresis.	3	3	---
-Basic concepts and applications of	5	5	

centrifugation.			
Basic concepts and applications of chromatography.	5	5	
-Basic concepts and applications of spectroscopy.	5	5	
-Basic concepts and applications of protein separation	5	5	
-liver function tests	5	5	
-Adhesion molecules and mechanisms.	5	5	
Total	**60**	**60**	
Credit	**4**	**4**	

Biochemistry of Adipose Tissue Module s:

Topics	Total no of hours	lectures	practical
Role of adipose tissues in metabolic reactions	5	5	
Development of white and brown adipose tissues	2	2	
Biomarkers of adipose tissues (leptin , adiponectin…)	2	2	
starvation and obesity	2	2	
Diseases related to the adipose tissues	2	2	
Tumor markers related to the adipose tissues	2	2	
Growth factor	2	2	
Role of adipose tissue as an endocrinal organ	2	2	
-Quality assurance of the research and clinical investigations.	5	5	
-Basic concepts and applications of electrophoresis.	3	3	
-Basic concepts and applications of centrifugation.	5	5	
Basic concepts and applications of chromatography.	5	5	
-Basic concepts and applications of spectroscopy.	5	5	
-Basic concepts and applications of protein separation	5	5	
-liver function tests	5	5	
-Adhesion molecules and mechanisms.	5	5	
Biomedical importance(tumor markers , enzymes, growth factors) and disease implication	3	3	
Total	**60**	**60**	
Credit	**4**	**4**	

Biochemistry of Nervous Tissues Module:

Topics	Total no of hours	lectures	practical
1-Neuromodulators , transmitters &Gamma amino butyric acid	4	4	---
Receptors	2	2	---
Compound lipids (Sphingophospholipids and phospholipids and cerebrosides) &their metabolic disorders	2	2	---
Myelin sheath	2	2	---
Role various micronutrients (vitamin, enzyme, minerals) in central nervous system	2	2	---
Diseases related to the central nervous system	2	2	---
Biochemistry of some amino acids (glycine, basic amino acid, glutamic, aromatic amino acid.	2	2	---
Cholesterol metabolism	2	2	---
Tumor markers related to the central nervous system	2	2	---
Growth factor	2	2	---
-Quality assurance of the research and clinical investigations.	5	5	
-Basic concepts and applications of electrophoresis.	5	5	---
-Basic concepts and applications of centrifugation.	5	5	
Basic concepts and applications of chromatography.	5	5	
-Basic concepts and applications of spectroscopy.	5	5	
-Basic concepts and applications of protein separation	5	5	
-liver function tests	5	5	
-Adhesion molecules and mechanisms.	5	5	
Biomedical importance(tumor markers , enzymes, growth factors) and disease implication	5	5	
Total	60	60	
Credit	**4**	**4**	

Biochemistry of Muscle Module:

Topics	Total no of hours	lectures	practical
Types of muscles (SKELETAL, SMOOTH, CARDIAC)and its metabolism	2	3	
Mmuscles proteins	1.5	1.5	
Filaments (actin, myosin, tropomyosin and tropinin)	1.5	1.5	
Changes in the conformation of the head of myosin drive muscle contraction	1.5	1.5	

Ca+ and calcium regulating hormones	1.5	1.5	
Diseases related to the muscles.	1.5	1.5	
Biochemistry of oeteoartheritis and oesteoprosis	1.5	1.5	
Kinases	1	1	
Tumor markers related to the muscles	1	1	
Growth factor	1	1	
-Quality assurance of the research and clinical investigations.	5	5	
-Basic concepts and applications of electrophoresis.	3	3	
-Basic concepts and applications of centrifugation.	5	5	
Basic concepts and applications of chromatography.	5	5	
-Basic concepts and applications of spectroscopy.	5	5	
-Basic concepts and applications of protein separation	5	5	
-liver function tests	5	5	
-Adhesion molecules and mechanisms.	5	5	
Biomedical importance(tumor markers , enzymes, growth factors) and disease implication	5	5	
Total	**60**	**60**	
Credit	**4**	**4**	

4. Teaching and Learning Methods

4.1- Lectures
4.2- Searches in computers (assignments)
4.3- practical

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 Exam: -Short essay: 40% -structured questions: 25% -MCQs: 20% -Commentary, Problem solving: 15%	 - Knowledge - Knowledge - Knowledge, intellectual skills - Intellectual skills, General transferable skills,
5.3-Structured Oral Exam	- Knowledge, Intellectual skills, General transferable skills
5.4-OSPE	-Practical skills, intellectual skills
5.5 Computer search assignment	-General transferable skills, intellectual skills

Assessment Schedule

1- Assessment 1: written examination week 24

2- Assessment 2: Structured Oral Exam week 24
3-Assessment 2: OSPE week 24
4- Assessment of attendance & absenteeism throughout the course

Weighting of Assessments

Final-term written examination	50%
Structured Oral Exam	30%
OSPE	20%
Total	100%

Formative only assessments: attendance and absenteeism

6. List of References

6.1- Essential Books (Text Books)

1. Text book of Medical Biochemistry with clinical Devlin, JM 1994
2. Harper's Biochemistry, Murray, RK 2009

6.2- Recommended Books

Lectures notes on clinical Biochemistry, Whitby et al 1993
Lippincott's illustrated reviews Biochemistry, Champe, PC, Harvey, RA, 2007

6.3- Periodicals, Web Sites, … etc

http://www.ncbi.nlm.gov/
http://www.vlib.org/
www.genome.ad.jp/kegg/regulation.
Findarticle.com
Freemedicaljournals.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 bathroom good illumination and safety & security tools
2. Teaching tools: including screens computers including cd (rw), data show, projector flip chart scanners
3. Computer program for designing &evaluation MCQ

Course Coordinator: Dr. Reda Salah Yuosef

Head of Department: Dr. Nagwa Sayed Ahmed Hassan

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

Course Specifications for Doctor Degree in Medical Biochemistry

University Sohag **Faculty Medicine**

1. Program on which the course is given MD degree in Medical Biochemistry
2. Major or minor element of program: Major
3. Department offering the program: Medical Biochemistry department
4. Department offering the course: Medical Biochemistry department
5. Academic year/ second part

9.Date of specification approval: Faculty council No. "250", decree No. "1378" dated 28/12/2013

A. Basic Information

Title: Medical Biochemistry

Code: BIO- 0514-300

Title	Lecture	Practical	Total	Credit hours
Medical Biochemistry	**420**	**750**	**1170**	**53**

B. Professional Information

1. Overall Aims of Course

By the end of the course the post graduate students should be able to have the professional knowledge of the biochemical role of the proteins and ca+2 in muscular contraction ,disease related to it and able to diagnose .

2. Intended Learning Outcomes of Course (ILOs)

a) Knowledge and Understanding:

a1. Mention the biochemical importance of intermediary metabolism (Anabolic and catabolic)
a2. The importance of clinical Biochemistry
a3. Explain the role of some hormones and minerals in muscle contraction
a4. List and explain the disease related to the muscle and cytoskeleton.
a5. Mention the principles and fundamentals of quality assurance of professional practice in the field of Medical Biochemistry

b) Intellectual Skills

b1. Diagnosis the affected biochemical deficiency
b2. Integrate basic biochemical and physiological facts with clinical data
b3. How to diagnose and treat as early as possible
b4. Usage of early diagnosing biomarkers
b5. Manage Scientific discussion administration based on scientific evidences and proofs

c) Professional and Practical Skills

c1. To identify the biochemical defect
c2. To perform some laboratory tests for early diagnosis.

c3. To be able to write laboratory report and other scientific writing (article, review or thesis).

d) General and Transferable Skills

d1. Acquiring skills to use computer to enter Biochemistry web sites and self learning.
d2. Team working for accurate diagnosing of diseases using internet.
d3. Ability to listen and understand any biochemical lecture.
d4. Utilize computers in conducting research and to collect scientific data.
d5. Use standard computer programs effectively (window, office programs).
d6. Acquiring skills for self learning
d7. Ability to interact (questioning and commenting) in a biochemical atmosphere (seminar, lecture or conference)

3. Contents:

Topics	NO. of hours	lecture	Practical
Biological oxidations include: -General consideration. -Electron transport. -ATP-synthesis. -Translocations. -Superoxide dismutase.	50	20	30
Glycolysis and citric acid cycle: - General consideration. -Enzyme structure and reaction mechanisms. -Regulation mechanisms and biomedical importance.	50	20	30
Other Pathways Carbohydrate Metabolism: A- Pentose –phosphate pathway and Gluconeogenesis. -General considerations -Enzyme reaction mechanisms. -Regulation mechanisms -Genetic diseases. B-Glycogen Metabolism: - General considerations - Glycogen Synthetase and phosphorylase: structure and catalytic activities. -Regulation -Genetic diseases C-Metabolism of other hexoses and biosynthesis of mucopolysaccharides.d details	100	30	70
Fat metabolism 1. General considerations. 2. Fatty acid oxidation and fatty acid biosynthesis. 3. Enzymes and reaction mechanisms for biosynthesis of cholesterol and related derivatives, phospholipids, glycolipids and related compounds.	70	30	40

4. Eicosanoids metabolism. 5. Adipose tissue metabolism. 6. Lipid transport in plasma: Lipoproteins: assembly and degradation, biomedical importance. 7. Genetic diseases.			
Protein metabolism: 1. -General consideration 2. -Amino acids degradation: General reaction, nitrogen disposal and ammonia disposal. 3. -Nitrogen fixation. 4. -One carbon metabolism. 5. -Individual amino acids metabolism.	100	30	70
Integration of metabolism: - Mechanisms and regulation	50	20	30
Metabolism of nucleotides: 1. -General considerations 2. -Purin and pyrimidine biosynthesis. 3. -Ribonucleotide reductase –thioredoxin and Glutaredoxin, Thymidylate 4. synthase and dihydrofolate reductase 5. -Uric acid 6. -Genetic diseases.	100	20	80
Porphyrin metabolism and heam biosynthesis and catabolism	100	20	80
Mineral metabolism Tissue chemistry			
Eukaryotic chromosomes Gene Expression : -Nucleosome and chromatin. • Mitochondrial DNA. • DNA structure :replication and repair: • Structure. • Nucleases and ligases. • DNA topology and topoisomerases. • DNA polymerases. • Origin and direction of replication.	50	30	20
Hormones 1. Classification, mechanisms of actions. 2. Pituitary and hypothalamic hormones. 3. Thyroid and parathyroid hormones. 4. Hormones of the adrenal cortex and medulla. 5. Hormones of the Gonads. 6. Hormones of the pancreas and G.I.T tract.	50	30	20
Tumor markers.			
Metabolism of xenobiotics			
Body fluid :			
-Blood, urine,-semen, C.S.F, bile, gastric juice, milk.			
Minerals: (calcium. phosphate, Na, K, mg, Cu,			

iron, zinc, iodine, mercury, Cd, florid, lead ,and others trace elements. - Immnoglobulines - Physical chemistry - Free radicals - Enzymes: - kinetics - Mechanism of action - Regulation -			
Vitamin: -Water soluble vitamin. -Excitable membranes and sensory systems : Update description, stressed upon : 10	100	20	80
Neurotransmitters: to provide coverage of the topics: - Mechanisms of nerve transmission. -Properties of neurotransmitters: Acetylcholine, epinephrine, norepinphrine and dopamine, glycine and gamma aminobutyrate and serotonin. -Details of ion-channels in the brain.	50	30	20
Biochemical basis of neuropsychatric disorders. Membrane Transport: -Conformational transition and energetic. -Sodium- potassium pump. -Sugar –ion transport. -Bacterial transport processes. -Bacteriorhodpsin and halorhodopsin. -Anion exchange protein of erythrocytes. -Cell-cell channels. -Transport antibiotics.	50	20	30
Extracellular Matrix : - Biochemistry of collagen, the most abundant prote the animal world. - Biochemistry of elastin. -Fibronectin and cell adhesion and migration. Tissue chemistry (muscle, cyto skeleton) -Laminin as the major protein component of renal glomeruli and other basal Laminae. -Glycosaminoglycans , Glycoproteins in details and proteoglycans .	50	30	20
The role of specific proteins and other key molecules in muscle contraction. Plasma proteins -Immunoglobulins and blood coagulation. The biochemical features of red blood cells and white blood	50	30	20

Viruses and Oncogenesis -Virus assembly. -Viruses and evolution. -Viroids. -Restriction and modification of DNA. -Lysogeny . -Tumor viruses. -Oncogens and cancer. -Human immuno deficiency virus.	100	30	70
Molecular Biology: 30	50	20	
Basic Molecular Biology Techniques: -Isolation of RNA and DNA from cell lines, and tissues. -Southern blotting. -Northern blotting -Rnase protection. -Nuclear Runoff Assay. (2) Gene Expression: (A) Prokaryotes: -Choice of vectors. -Construction of vectors. -Generation antibodies to fusion proteins. (B) Eukaryotes: -Selection of system. -Preparation of constructs. -Expression. -Analysis of expressed products. -Approaches to purification. (C)Further Approaches: -Bacculovirus and yeast. -In vitro transcription /Translation. (3) Polymerase Chain Reaction (PCR). -Reverse Transcriptase Polymerase Chain Reaction (analysis and quantization) -Mutagenesis. -Sequencing. - Differential Display. (4) Alteration Gene Expression:			
Total	**1170**	**420**	**750**
Credit	**53**	**28**	**25**

4. <u>Teaching and Learning Methods</u>

4.1- Lectures

4.2- Searches in computers (assignments)

4.3- Practical

5. Student Assessment Methods

Method of assessment	The assessed ILOs
5.1- Observation of attendance and absenteeism.	- General transferable skills, intellectual skills
5.2- Log book	- General transferable 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
5.5-OSPE	-Practical skills, intellectual skills
5.6 Computer search assignment	-General transferable skills, intellectual skills

Assessment Schedule

Assessment 1…. log book (formative exam)	Week: 80
Assessment 2…. Final OSPE ….	Week: 96
Assessment 3…..Final written exam ……..	Week: 96
Assessment 4 … Final Structured Oral Exam	Week: 96

Weighting of Assessments

- Final Written Examination. Separate exam.
  Passing in the written exam is a condition to attend the following exams:
- Structured Oral Exam. 50 %
- OSPE 50 %

Total 100%

Formative only assessment: simple research assignment, log book, attendance and absenteeism

6. List of References

6.1- Essential Books (Text Books)

1. Text book of Medical Biochemistry with clinical Devlin, JM 1994
2. Harper's Biochemistry, Murray, RK 2009

6.2- Recommended Books

1. Lectures notes on clinical Biochemistry, Whitby et al 1993
2. Lippincott's illustrated reviews Biochemistry, Champe, PC, Harvey, RA, 2007

6.3- Periodicals, Web Sites, … etc

http://www.ncbi.nlm.gov/
http://www.vlib.org/
www.genome.ad.jp/kegg/regulation.
Findarticle.com

7. **Facilities Required for Teaching and Learning**
    1. Appropriate teaching class
    2. Laboratory equipment and safety
    3. Computers and data show

Course Coordinator: Dr. Reda Salah Yuosef

Head of Department: Nagwa Sayed Ahmed Hassan

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