

Peer Revision

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

Program Specification of Medical Doctorate Degree of Histology and Cell Biology

Sohag University

Faculty of Medicine

A- Basic Information

1. Program title: MD. Degree in Histology and Cell Biology
2. Program type: single
3. Faculty: Faculty of Medicine
4. Departments: Histology and Cell Biology Department
5. Coordinator : Dr. Hekmat O Abd-elaziz
6. Ass. Co-ordinator: dr. Nesreen Gamal El-Deen
7. External evaluator:- Prof. Dr Ahmad Saeed El-Morsy
8. Last date of program specifications approval: Date of specification 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 student with the advanced medical knowledge and skills essential for the mastery of practice of Histology and Cell Biology and necessary for further training and practice in the field of Histology and Cell Biology through providing:

- 1- Recent scientific knowledge essential for the mastery of practice of Histology and Cell Biology according to the international standards.
- 2- Skills necessary for proper practice in the field of Histology and Cell Biology including diagnostic, problem solving and decision making skills.
- 3- Ethical principles related to the practice in this highly sensitive 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 advances in methodologies of scientific research in Histology.
2. The continuous working to add new knowledge in his field.



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A- Basic Information

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B- Professional Information :

1. Program aims:

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- 1- Recent scientific knowledge essential for the mastery of practice of Histology and Cell Biology according to the international standards.
- 2- Skills necessary for proper practice in the field of Histology and Cell Biology including diagnostic, problem solving and decision making skills.
- 3- Ethical principles related to the practice in this highly sensitive 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 advances in methodologies of scientific research in Histology.
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 program the student should be able to:

- a1. Describe the recent knowledge of the histological structure of the different body tissues and organs
- a2. Illustrate the function of the different cells, tissues and organs in relation to their microscopic and molecular structure .
- a3. Describe the methods of cell division and its abnormalities.
- a4. Describe the different methods for tissue preparation and examination.
- a5. Define the different types of histological stains.
- a6. Illustrate the different methods for detection the proteins, carbohydrates , lipids and enzymes in the tissue by different specific methods.
- a7. Define the molecular structure of the nucleus and the cytoplasmic organelles.
- a8. Enumerate the recent advances in biostatistics and computer.
- a9. Enumerate Principles, methodologies, tools of scientific research
- a10. List the ethics in researches regarding the human and experimental animals.
- a11. Illustrate the moral and legal aspects of managing the departmental activities.
- a12. List the quality standards of laboratory biosafety.
- a13. List the quality standards of practical and theoretical teaching.
- a14. List the quality standards of student assessment.
- a15. Define the hazardous effects of common chemicals used and the precautions to minimize these hazards.

a16. List the principles of evidence based medicine.

b) Intellectual Skills:

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

- b1. Interpret and analyze research data in the field of Histology.
- b2. Identify and analyze the contents any histological slide.
- b3. Interpret the medical importance of the histological structure at molecular level.
- b4. Evaluate the general and specific histological stains for microdetection of the cytoplasmic content.
- b5. Evaluate and interpret any morphological abnormalities in the examined slides by light and electron microscopes.
- b6. Conduct experimental studies in the field of Histology.
- b7. Formulate and publish at least two papers from his research studies.
- b8. Conclude risk assessment and management in dealing with lab animals and conducting tissue preparation for LM and EM examinations.
- b9. Formulate a plan for improving the departmental performance in the field of teaching and research.
- b10. Present evidence based scientific discussions in at least ten seminars.
- b11. Analyze and criticize scientific research papers in at least ten journal clubs
- b12. Collect and verify data from different sources

c) Professional and Practical Skills:

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

- c1. prepare solutions used for micro techniques and different stains perfectly and independently.
- c2. perform all the methods of administration to the lab animals.
- c3. Teach the steps of micro technique for paraffin section preparation perfectly and independently.
- c4. prepare frozen sections perfectly and independently.
- c5. Train special histological stains perfectly and independently.
- c6. perform histochemical reactions perfectly and independently.
- c7. Teach tissue preparations for E.M. perfectly and independently.
- c8. Train the steps of immunohistochemistry perfectly and independently.
- c9. Examine and photograph experimental specimens by light microscope perfectly and independently.

- c10. Examine and photograph experimental slides by electron microscope perfectly and independently.
- c11. Write professional reports on any histological slide or histological photograph.
- c12. Use computer soft wares to analyze slides (image analysis).
- c13. Perform recent advanced technological methods in collection, analysis and interpretation of data.
- c14. Master the basic and modern professional skills in conducting researches.

d) General and Transferable Skills:

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

- d1. Communicate effectively with students, colleagues and professors.
- d2. Use the information technology in self learning, teaching and research.
- d3. Share in student teaching and student assessment under supervision.
- d4. Assess his performance and improve it continuously.
- d5. Use the web sites, medical journals, personal communications ,digital libraries to gain knowledge.
- d6. Work coherently and successfully as a part of a team or as a leader.
- d7. Administer scientific activities as seminars, journal clubs ,scientific meetings or conferences.

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 session 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 session No.191, dated: 15/3/2010. The adoption of NARS and the suggested ARS were approved by University council degree No 587, in its session No.60. dated 26-12-2011.

5. Curriculum structure and contents:

5.a- Program duration: 7 semesters (3.5 years).

5.b- Program structure:

5.c- Number of hours per week:

Subject	hours /week		
	Lectures	Practical	Clinical
First Part:			
<u>Obligatory courses (minor):</u> two courses:			
Bio Statistics & Computer	2	2	
Research Methodology	2	2	

Optional courses: two of the followings:			
Immune system & organ transplant	4		
Clinical Pathology	4		
Tissue culture	4		
Electron microscopy	4		
Medical genetics	4		
Molecular biology	4		
Second Part:			
Histology	7	12.50	

code	Item	No	%	
b.i	Total credit hours	Compulsory	82	91.1
		Elective	0	0
		Optional	8	8.9
b.iii	credit hours of basic sciences courses	8	8.9	
b.iv	credit hours of courses of social sciences and humanities	0	0	
b.v	credit hours of specialized courses:	59	66.6	
b.vi	credit hours of other course	0	0	
b.vii	Practical/Field Training	8	8.9%	
b.viii	Program Levels (in credit-hours system):			
	Level 1: 1 st part	14	15.6	
	Level 2: 2 nd Part	53	58.8	
	Level 3: Thesis	15	16.7	

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

6.1- Level of program:

Semester...1.....

First part

a. Compulsory

Course title	Total No. of hours	No of hours/week			Program ILOs. Covered
		Lect.	practical	clinical.	
Biostatistics & computer	3	2	2		a8, ,b1,b12 ,c13,d2
Research Methodology	3	2	2		a9,a16, b6,b7, b11,c17,d2,d6

b. Optional

Course title	Total No. of hours	No of hours/week			Program ILOs. Covered
		Lect.	practical	clinical	
Immunology & Organ Transplant	4	4	0		a4,a15,b2,b3,b5,b10,b11,c1,c4,c8, c9,d1,d2,d4,d5,d6,d7
Clinical Pathology	4	4	0		a1,a4,b1,b5,b6,b10,b11,c8,c9,c11,

					c12,d1,d2,d4,d5,d6,d7
Tissue Culture	4	4	0		a1,a3,a4,a6,a7,a15,b1,b3,b4,b6,b8,b10,b11,c1,c2,c3,c6,d1,d2,d4,d5,d6,d7
Electron Microscopy	4	4	0		a1,a2,a15,b1,b5,b6,b8,b10,b11,c2,c7,c10,d1,d2,d4,d5,d6,d7
Molecular Biology	4	4	0		a1,a6,a7,a15,b3,b4,b7,b10,b11,c2,c7,d1,d4,d5,d6,d7
Medical Genetics	4	4	0		a2,a3,a15,b1,b5,b6,b8,b1,b11,c1,c2,c6,d1,d4,d5,d6,d7

**Second part
a-Compulsory**

Course title	No of credit hours	No of hours/week		Program ILOs. Covered
		Lect.	Lab	
Histology and Cell Biology	53	7	12.5	a1,a2,a3,a4,a5,a6,a11,a12,a13,a14,a15,b2,b3,b4,b5,b6,b7,b8,b9,b10,b11,c1,c2,c3,c4,c5,c6,c7,c8,c9,c10,c11,c12,d1,d3,d4,d5,d6,d7

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 Histology 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 Histology 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 $\geq 75\%$ 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 علمي موسع	٦
Training courses	دورات تدريبية	12/ day
Conference attendance	حضور مؤتمرات علمية داخلي 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 علمي موسع	٦
Morbidity and Mortality conference	ندوة تحليل المخاطر المرضية أو الوفاة	٦
Self education program	برنامج التعليم الذاتي	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- 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
- the first optional course :Written Exam (3 hours) + structured oral Exam.
- the second optional course :Written Exam (3 hours) + structured oral Exam .

Part II:

- **Histology and Cell Biology**: Two Written Exams (3 hours for each) + OSPE + Structured oral Exam.

10. Program evaluation:

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

Course Specifications of Biostatistics & Computer for MD Degree in Histology and Cell Biology

Sohag University

Faculty of Medicine

- 1- Program on which the course is given: MD Degree in Histology and Cell Biology
- 2- Minor element of program
- 3- Department offering the program: Histology and Cell Biology Department
- 4- Department offering the course: Community Medicine Department
- 5- Academic year: Post graduate, MD Degree in Histology, 1st part
- 6- Date of specification approval: Faculty council No. "317", decree No. "1533" dated 17/12/2018.

A- Basic Information

Title: Biostatistics & Computer

Code: COM 0511-300

Title	Lecture	Practical	Total
Biostatistics & Computer	30	30	60

B- Professional Information

1- Overall Aims of Course

The aim of this program is to provide the postgraduate student with the medical knowledge and skills essential for the practice of specialty and necessary to gain:

- 1- Scientific knowledge essential for practice of Biostatistics and Computer according to the international standards
- 2- Skills necessary for proper practice in the field of Biostatistics and Computer including diagnostic, problem solving and decision making skills.
- 3- Ethical principles related to the practice in this specialty.
- 4- Active participation in community needs assessment and problems solving.
- 5- Maintenance of learning abilities necessary for continuous medical education.
- 6- Maintenance of research interest and abilities

2- Intended Learning Outcomes of Courses (ILOs)

a) **Knowledge and understanding:**

By the end of the course, the graduate should be able to:

- a1. List 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 graduate should be able to:

- b1. Enumerate how to collect and verify data from different sources
- b2. Interpret and analyze research data in the field of Histology and Cell Biology.

c) Professional and Practical Skills:

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

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

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	2
-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	- Intellectual skills, Knowledge, General transferable skills
5.4Computer 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, 2008.,Robert Wallace, publisher McGraw-Hill Medical; 15 edition.

6.2- Recommended Books

1- Dimensions of Community Based projects in Health Care, 2018. Arxer, Steven L., Murphy, John W.; 1st edition.

2- Parks Text Book of Preventive & Social Medicine. 2017., K. Park. BanarsidasBhanot Publishers; 23 edition.

3- Clinical Epidemiology: The Essentials, 2013, Robert F., Suzanne W. Fletcher, Grant S., publisher Lippincott Williams & Wilkins; 5 edition.

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; hall and laboratory, comfortable desks, good source of areation, bathroom, good illumination and security and safety.
- 2- Teaching tools: including screen, computers, data show, slide projector, flip chart, white board, video player, digital camera, scanner and colored and lazer printers.
- 3- Computer programs: for designing and evaluating MCQs.

Course Coordinator: Dr/ Foad Metry Atya

Head of Department: Dr/ Ahmed Fathy Hammed

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

**Course Specifications of Research Methodology for MD Degree in
Histology and Cell Biology
Sohag University Faculty of Medicine**

- 1- Program on which the course is given: MD Degree in Histology
- 2- Minor element of program
- 3- Department offering the program: Histology and Cell Biology Department
- 4- Department offering the course: Community Medicine Department
- 5- Academic year: Post graduate, MD Degree in Histology and Cell Biology, 1st part
- 6- Date of specification approval: Faculty council No. "317", decree No. "1533" dated 17/12/2018

A- Basic Information

Title: Research Methodology for MD Degree in Histology and Cell Biology

Code: COM 0511-300

Title	Lecture	Practical	Total
research methodology	30	30	60

B- Professional Information

1- Overall Aims of Course

The aim of this program is to provide the postgraduate student with the medical knowledge and skills essential for the practice of specialty and necessary to gain:

- 1- Scientific knowledge essential for practice of Research Methods according to the international standards.
- 2- Skills necessary for proper practice in the field of Research Methods including diagnostic, problem solving and decision making skills.
- 3- Ethical principles related to the practice in this specialty.
- 4- Active participation in community needs assessment and problems solving.
- 5- Maintenance of learning abilities necessary for continuous medical education.
- 6- Maintenance of research interest and abilities.

2- Intended Learning Outcomes of Courses (ILOs)

a) Knowledge and understanding:

By the end of the course, the graduate should 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. List 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 graduate should be able to:

- b1. Conduct experimental studies in the field of Histology.
- b2. Formulate and publish at least two papers from his research studies.
- b3. Analyze and criticize scientific research papers in at least ten journal clubs

c) Professional and Practical Skills:

By the end of the course, the graduate should be able to:

- c1. List the basic and modern professional skills in conducting researches.
- c2. Design new methods, tools and ways of conducting researches.

d) General and Transferable Skills:

By the end of the course, the graduate should be able to:

- d1. Use information technology to serve the development of professional practice.
- d2. Work coherently and successfully as a part of a team or as a leader.

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	4	2	2
Applicability	4	2	2
Scientific writing:	4	2	2
A protocol	4	2	2
A curriculum			
Setting an objective	2	1	1
- Critical thinking	2	1	1
Formulation of papers	8	4	4
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,
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Weighting of Assessments

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Final Structured Oral Exam	50	%
Total	100	%

Any formative only assessments Attendance and absenteeism throughout the course

Computer search assignment performance throughout the course

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3- WWW. CDC and WHO sites

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7.1-Adequate infrastructure: including teaching places; hall and laboratory, comfortable desks, good source of areation, bathroom, good illumination and security and safety.

7.2- Teaching tools: including screen, computers, data show, slide projector, flip chart, white board, video player, digital camera, scanner and colored and lazer printers.

7.3- Computer programs: for designing and evaluating MCQs.

Course Coordinator:

Course Coordinator: Dr/Foad Metry Atya

Head of Department: Dr/ Ahmed Fathy Hammed

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

**Course Specifications of Immunology & Organ Transplant for MD
Degree in Histology and Cell Biology
Sohag University Faculty of Medicine**

- 1- Program on which the course is given: MD Degree in Histology
- 2- Minor element of program
- 3- Department offering the program: Histology and Cell Biology Department
- 4- Department offering the course: Histology & Pathology Departments
- 5- Academic year: Post graduate, MD Degree in Histology and Cell Biology, 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 Immunology & Organ Transplant for MD Degree in Histology and Cell Biology

Code: PAT 0511-300

Title	lecture	practical	Total
Immunology & Organ Transplant	60	0	60

B- Professional Information

1- Overall Aims of Course

The aim of this program is to provide the postgraduate student with the medical knowledge and skills essential for the practice of specialty and necessary to gain:

1. Scientific knowledge essential for practice of Immunology & Organ Transplant according to the international standards.
2. Skills necessary for proper practice in the field of Immunology & Organ Transplant including diagnostic, problem solving and decision making skills.
3. Ethical principles related to the practice in this specialty.
4. Active participation in community needs assessment and problems solving.
5. Maintenance of learning abilities necessary for continuous medical education.
6. Maintenance of research interest and abilities.

2- Intended Learning Outcomes of Course (ILOs):

a) Knowledge and Understanding:

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

- a1. List the different methods for immunohistochemical tissue examination.
- a2. Define the hazardous effects of common chemicals used and the precautions to avoid or minimize these hazards.
- a3. Enumerate the cellular mechanisms of immunology.

b) Intellectual Skills:

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

- b1. Identify and analyze the contents any pathological slides related to immune reactions.
- b2. Interpret in a professional manner a pathology report.
- b3. Evaluate and interpret any morphological abnormalities in the examined slides by light microscopes.
- b4. Evaluate evidence based scientific discussions in at least ten seminars.

c) Professional and Practical Skills:

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

- c1. Prepare solutions used for immunohistochemistry perfectly and independently.
- c2. Prepare frozen sections perfectly and independently.
- c3. Perform the steps of immunohistochemistry perfectly and independently.
- c4. Examine and photograph experimental slides by light microscope perfectly and independently.

d) General and Transferable Skills:

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

- d1. Communicate effectively with students, colleagues and professors.
- d2. Assess his performance and improve it continuously.
- d3. Use the web sites, medical journals, personal communications ,digital libraries to gain knowledge.
- d4. Administer scientific activities as seminars, journal clubs ,scientific meetings or conferences.

3- Contents:

Topic	No. of hours	Lecture	Practical
1. Inflammation & repair.	4	ξ	
2. Degeneration.	4	ξ	
3. Cell death & necrosis.	4	ξ	
4. Basic immunology.	4	ξ	
5. Immunopathology.	4	ξ	
6. Organ transplant.	8	∧	
7. Transplant rejection.	4	ξ	
8. Techniques & immunohistochemistry.	11	∪∪	
9. Cell culture.	4	ξ	
10. Intracellular accumulation.	4	ξ	
11. Extracellular deposits.	4	ξ	
12. Cellular growth disorders.	5	ο	
TOTAL	60	60	
Credit hours	4	4	

4- Teaching and Learning Methods

4.1-lectures.

4.2-practical lessons in the form of jars, radiological films and computer based lectures .

4.3- Assignments

4.4- attending and participating in scientific conferences, work shops and thesis discussion to acquire the general and transferable skills needed

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 assignment	-General transferable skills, intellectual skills

Assessment Schedule

By the end of the course:

Assessment 1	Final written exam	Week 24
Assessment 2	Final Structured Oral Exam	Week 24
Assessment 3	Final OSPE	Week 24
Assessment 4	attendance & absenteeism throughout the course	

Weighting of Assessments

Final 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):

- Muir's text book of pathology, 15th edition, 2014.
- Robbins Pathologic Basis of Diseases, 10th edition, 2015.

6.2- Recommended Books:

- Rosai&Ackerman text book of Pathology, 11th edition,2017
- Sternberg text book of Pathology, 6th edition, 2015.

6.3- Web Sites: <http://www.ncbi.nlm.nih.gov/pubmed/>

7- Facilities Required for Teaching and Learning

7.1-Adequate infrastructure: including teaching places; hall and laboratory, comfortable desks, good source of areation, bathroom, good illumination and security and safety.

7.2- Teaching tools: including screen, computers, data show, slide projector, flip chart, white board, video player, digital camera, scanner and colored and lazer printers.

7.3- Computer programs: for designing and evaluating MCQs.

Course coordinator: Dr. Fatma Al Zahraa Salah El deen

Head of the department: Dr. Afaf El Nashaar

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 Histology and Cell Biology

Sohag University

Faculty of Medicine

1. Program on which the course is given: MD Degree in Histology and Cell Biology
2. Minor element of program
3. Department offering the program: Histology and Cell Biology Department
4. Department offering the course: Clinical Pathology Department
5. Academic year: Post graduate, MD Degree in Histology and Cell Biology, 1st part
6. Date of specification approval: Faculty council No. "317", decree No. "1533" dated 17/12/2018

A- Basic Information

Title: Clinical Pathology for MD Degree in Histology

Code: CL.P. 0511-300

Title	Lecture	Practical	Total	Credit hours
Clinical and Chemical Pathology	60	0	60	4

B- Professional Information

1. Overall Aims of Course

The aim of this program is to provide the postgraduate student with the medical knowledge and skills essential for the practice of specialty and necessary to gain:

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

2. Intended Learning Outcomes of Courses (ILOs)

a) **Knowledge and understanding:**

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

- a1. Mention the recent - advances in diagnosing various hematological disorders as bone marrow transplantation, bleeding and coagulation disorders.
- a2. Identify different techniques for semen analysis
- a3. Identify recent methods of histopathology tests.
- a4. List different methods for collection of various tissue samples.

b) Intellectual skills:

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

- b1. To interpret lab investigations as blood picture, bone marrow examination, results of lymph node, spleen biopsy, and tests for coagulation disorders.
- b2. Evaluate and interpret any morphological abnormalities in the examined slides by light microscope.
- b3. Examine semen for different abnormalities.
- b4. Differentiate between samples of tissue obtained through exfoliative cytology.
- b5. Evaluate evidence based scientific discussions in at least ten seminars.
- b6. Analyze and criticize scientific research papers.

c) Professional and Practical Skills:

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

- c1. Perform the steps of immunohistochemistry perfectly and independently.
- c2. Examine and photograph experimental slides by light microscope perfectly and independently.
- c3. Write professional reports on any haematological slide
- c4. Use computer soft wares to analyze slides (image analysis) or analyze research data.

d) General and Transferable Skills

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

- d1. Communicate effectively by all types of effective communication.
- d2. Use information technology to serve the development of professional practice.
- d3. Use the web sites, medical journals, personal communications ,digital libraries to gain knowledge.
- d4. Assess his performance and improve it continuously.
- d5. Work coherently and successfully as a part of a team or as a leader.
- d6. Administer scientific activities as seminars, journal clubs ,scientific meetings or conferences.

3. Contents

Topic	No. of hours	Lecture	Practical
Clinical haematology: - Indications for blood transfusion. - Hazards of blood transfusion. -Anemias: -Iron deficiency anemia -Megaloplastic anemia -Hemolytic anemias -Aplastic anemia. - Total and differential blood picture. - Manual blood cells count Normal haemostasis. Anticoagulants	15	15	0
Clinical Chemistry: - Carbohydrates. - Proteins - lipid - Liver function. -Kidney function -Urine and stool analysis Semen analysis	15	15	0
Clinical microbiology: - Methods of collecting samples and criteria of rejection. - Staining and culture media. - Exfoliative cytology.	15	15	0
Clinical immunology: - Types of antigen and antibody reactions. - Histocompatibility tests - Immunological aspects of different diseases	15	15	0
TOTAL	60	60	0
Credit hours	4	4	

4. Teaching and Learning Methods

4.1- Lectures in the form of discussions.

4.2- Practical sessions including practical assignments.

4.3- Assignments

4.4- attending and participating in scientific conferences, work shops and thesis discussion to acquire the general and transferable skills needed

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 assignment	-General transferable skills, intellectual skills

Assessment Schedule

By the end of the course:

Assessment 1	Final written exam	Week 24
Assessment 2	Structured Oral Exam	Week 24
Assessment 3	Final OSPE	Week 24
Assessment 4	attendance & absenteeism throughout the course	

Weighting of Assessments

Final 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

Essential Haematology

6.2- Recommended Books:

6.3- Periodicals, Web Sites.

<http://www.ncbi.nlm.gov>.

<http://www.google.com>.

<http://Freemedicaljournals.com>.

7. Facilities Required for Teaching and Learning

7.1-Adequate infrastructure: including teaching places; hall and laboratory, comfortable desks, good source of areation, bathroom, good illumination and security and safety.

7.2- Teaching tools: including screen, computers, data show, slide projector, flip chart, white board, video player, digital camera, scanner and colored and lazer printers.

7.3- Computer programs: for designing and evaluating MCQs.

Course coordinator: Dr/ Laila M Yousef

Head of the department: Dr/ Hassna A. Abo elwafa

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

Course Specifications of Tissue Culture for MD Degree in Histology and Cell Biology

Sohag University

Faculty of Medicine

1. Program on which the course is given: MD Degree in Histology and Cell Biology
2. Minor element of program
3. Department offering the program: Histology and Cell Biology Department
4. Department offering the course: Histology and Cell Biology Department
5. Academic year: Post graduate, MD Degree in Histology, 1st part
6. Date of specification approval: Faculty council No. "317", decree No. "1533" dated 17/12/2018.

A- Basic Information

Title: Tissue Culture for MD Degree in Histology and Cell Biology

Code: HIS 0511-300

Title	Lecture	Practical	Total	Credit hours
Tissue Culture	60	0	60	4

B- Professional Information

1- Overall Aims of Course

The aim of this program is to provide the postgraduate student with the medical knowledge and skills essential for the practice of specialty and necessary to gain:

1. Scientific knowledge essential for practice of Tissue Culture according to the international standards.
2. Skills necessary for proper practice in the field of Tissue Culture including diagnostic, problem solving and decision making skills.
3. Ethical principles related to the practice in this specialty.
4. Active participation in community needs assessment and problems solving.
5. Maintenance of learning abilities necessary for continuous medical education.
6. Maintenance of research interest and abilities.

2- Intended Learning Outcomes of Course (ILOs)

a) **Knowledge and Understanding:**

By the end of this program, the student is expected to

- a1. List the histological structure of the cell.
- a2. Describe the methods of cell division and its abnormalities.
- a3. List the different methods for tissue culture examination.
- a4. Define the molecular structure of the nucleus and the cytoplasmic organelles.

- a5. Define the hazardous effects of common chemicals used and the precautions to avoid or minimize these hazards.

b) Intellectual Skills

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

- b1. Analyze and interpret research data in the field of tissue culture.
- b2. Evaluate new solutions to many kinds of cell culture problems.
- b3. Evaluate the general and specific histological stains for microdetection of the cytoplasmic content.
- b4. Conduct experimental studies in tissue culture.
- b5. Risk assessment and management in dealing with lab animals.
- b6. Evaluate evidence based scientific discussions in at least ten seminars.
- b7. Analyze and criticize scientific research papers.

c) Professional and Practical Skills

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

- c1. Prepare solutions used for culture media perfectly and independently.
- c2. Perform all the methods of administration to the lab animals.
- c3. Perform the steps of tissue culture perfectly and independently.
- c4. Perform preparations for tissue culture perfectly and independently.

d) General and Transferable Skills

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

- d1. Communicate effectively with students, colleagues and professors.
- d2. Assess his performance and improve it continuously.
- d3. Use the web sites, medical journals, personal communications ,digital libraries to gain knowledge.
- d4. Administer scientific activities as seminars, journal clubs ,scientific meetings or conferences.

3- Contents

Topic	No. of hours	Lecture	Practical
1. Cellular structure	5	5	
2. Introduction: Background and advantages of cell and tissue culture, and biology of cultured cells,	5	5	
3. Experimental animal handling	5	5	
4. Design and layout for a dedicated cell culture lab	5	5	

5. Aseptic technique, culture vessels and laboratory safety	4	4	
6. Cell culture media and requirements	4	4	
7. Serum free media	4	4	
8. Primary Cell culture	4	4	
9. sub culture and Cell lines	4	4	
10. Cell separation and characterization	4	4	
11. Cloning and Selection	4	4	
12. Cell Differentiation	4	4	
13. Transformation, immortalization, contamination and cryopreservation	4	4	
L 4. Cell Quantitation	4	4	
TOTAL	60	60	
Total number of credit hours	4	4	

4- Teaching and Learning Methods

4.1-lectures.

4.2-Practical lessons and computer based lectures.

4.3- Assignments

4.4- attending and participating in scientific conferences, seminars,work shops and the is discussion to acquire the general and transferable skills needed

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 assignment	-General transferable skills, intellectual skills

Assessment Schedule

By the end of the course:

Assessment 1	Final written exam	Week 24
Assessment 2	Final Structured Oral Exam	Week 24
Assessment 3	Final OSPE	Week 24
Assessment 4	attendance & absenteeism throughout the course	

Weighting of Assessments

Final 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. Culture of Animal Cells: A Manual of Basic Technique, 5th Edition. R. Ian Freshney. July 2005. Pp 672. ISBN: 978-0-471-45329-1

6.2- Recommended Books

Molecular Biology of the Cell: Reference Edition by Bruce Alberts, Alexander Johnson, Julian Lewis, and Martin Raff (Nov. 14, 2007).

6.3- Periodicals, Web Sites

<http://www.sigmaaldrich.com/life-science/cell-culture/learning-center/cell-culture-manual.html>

7- Facilities Required for Teaching and Learning

7.1- Adequate infrastructure: including teaching places; hall and laboratory, comfortable desks, good source of aeration, bathroom, good illumination and security and safety.

7.2- Teaching tools: including screen, computers, data show, slide projector, flip chart, white board, video player, digital camera, scanner and colored and lazer printers.

7.3- Computer programs: for designing and evaluating MCQs.

Course coordinator: Dr/ Nesreen Gamal El-Deen

Head of the department: Dr / Hekmat Osman Abdel Aziz

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

Course Specifications of Electron Microscopy for MD Degree in Histology and Cell Biology

Sohag University

Faculty of Medicine

1. Program on which the course is given: MD Degree in Histology and Cell Biology
2. Minor element of program
3. Department offering the program: Histology and Cell Biology Department
4. Department offering the course: Histology and Cell Biology Department
5. Academic year: Post graduate, MD Degree in Histology and Cell Biology, 1st part
6. Date of specification approval: Faculty council No: "317", decree No. "1533" dated 17/12/2018.

A- Basic Information

Title: Electron Microscopy for MD Degree in Histology

Code: HIS 0511-300

Title	Lecture	Practical	Total	Credit hours
Electron Microscopy	٦٠		60	4

B- Professional Information

1- Overall Aims of Course

The aim of this program is to provide the postgraduate student with the medical knowledge and skills essential for the practice of specialty and necessary to gain:

1. Scientific knowledge essential for practice of Electron Microscopy according to the international standards.
2. Skills necessary for proper practice in the field of Electron Microscopy including diagnostic, problem solving and decision making skills.
3. Ethical principles related to the practice in this specialty.
4. Active participation in community needs assessment and problems solving.
5. Maintenance of learning abilities necessary for continuous medical education.
6. Maintenance of research interest and abilities.

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

a) **Knowledge and understanding:**

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

- a1. Mention the recent knowledge of the ultrastructure of the different body tissues and organs.
- a2. Illustrate the function of the different cells and organs in relation to their microscopic ultrastructure.
- a3. Define the hazardous effects of common chemicals used and the precautions to minimize these hazards.
- a4. List the advanced types, uses and different techniques of electron microscopes.

b) Intellectual Skills

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

- b1. Analyze and interpret research data in the field of Histology.
- b2. evaluate and interpret any morphological abnormalities in the examined tissues by electron microscopes.
- b3. Risk assessment and management in dealing with lab animals and conducting tissue preparation for EM examinations.
- b4. Present evidence based scientific discussions in at least ten seminars.
- b5. Analyze and criticize scientific research papers.

c) Professional and Practical Skills:

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

- c1. Perform all the methods of administration to the lab animals.
- c2. Perform tissue preparations for E.M. perfectly and independently.
- c3. Examine and photograph experimental specimens by electron microscope perfectly and independently.

d) General and Transferable Skills:

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

- d1. Communicate effectively with students, colleagues and professors.
- d2. Use the information technology in self learning, teaching and research.
- d3. Assess his performance and improve it continuously.
- d4. Use the web sites, medical journals, personal communications ,digital libraries to gain knowledge.
- d5. Administer scientific activities as seminars, journal clubs ,scientific meetings or conferences.

3- Contents

Topic	No. of hours	Lecture	Practical
History of microscopy	4	4	
Introduction to Electron Microscopy	4	4	
Electrons in electric and magnetic fields, electron lenses.	4	4	
lab safety in using E M	4	4	
Types of Electron Microscope	4	4	
Components of a transmission electron microscope	4	4	
Specimen Fixation	4	4	
Fixation/Dehydration/Embedding	4	4	
Specimen Coating for SEM	4	4	
Digital Image Processing	4	4	
Glass Knife & Block Trimming	4	4	

Sectioning	4	4	
Interpretation of the electron microscopic image	4	4	
Application of electron microscope to research study	4	4	
Advances in Electron Microscope	4	4	
Total	60	60	
Credit hours	4	4	

4- Teaching and Learning Methods

4.1-lectures.

4.2-practical. sessions to gain practical skills

4.3- Assignments

4.4- attending and participating in scientific conferences, seminars ,work shops and thesis discussion to acquire the general and transferable skills needed

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 assignment	-General transferable skills, intellectual skills

Assessment Schedule

By the end of the course:

Assessment 1	Final written exam	Week 24
Assessment 2	Final Structured Oral Exam	Week 24
Assessment 3	Final OSPE	Week 24
Assessment 4	attendance & absenteeism throughout the course	

Weighting of Assessments

Final 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. Bloom & Fawcett: Concise Histology A Hodder Arnold Publication; 1st edition.
2. Electron Microscopy and Analysis by P.J. Goodhew and F.J. Humphreys, Taylor and Francis, London,

6.2- Recommended Books

Electron Microscopy: Principles And Fundamentals, S. Amelinckx, D. van Dyck, J. van Landuyt and G. van Tendeloo (Editors), VCH, Weinheim, .
Physical Principles of Electron Microscopy: An Introduction to TEM, SEM, and AEM (2007)

6.3- Periodicals, Web Sites ... etc

<http://www.med-ed->

[http:// www.google .com](http://www.google.com)

7- Facilities Required for Teaching and Learning

1. Adequate infrastructure: including teaching places; hall and laboratory, comfortable desks, good source of areation, bathroom, good illumination and security and safety.
2. Teaching tools: including screen, computers, data show, slide projector, flip chart, white board, video player, digital camera, scanner and colored and lazer printers.
3. Computer programs: for designing and evaluating MCQs.

Course coordinator: Dr/ Nesreen Gamal El-Deen

Head of the department: Dr. Hekmat Osman Abdel Aziz

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

Course Specifications of Molecular Biology for MD Degree in Histology and Cell Biology

Sohag University

Faculty of Medicine

1. Program on which the course is given: MD Degree in Histology and Cell Biology
2. Minor element of program
3. Department offering the program: Histology and Cell Biology Department
4. Department offering the course: Department of Pediatrics
5. Academic year: Post graduate, MD Degree in Histology and Cell Biology, 1st part
6. Date of specification approval: Faculty council No: "317", decree No. "1533" dated 17/12/2018.

A- Basic Information

Title: Molecular Biology for MD Degree in Histology

Code: PED 0511- 300

Title	Lecture	Practical	Total	Credit hours
Molecular Biology	60		60	4

B- Professional Information

1. Overall Aims of Course

The aim of this program is to provide the postgraduate student with the medical knowledge and skills essential for the practice of specialty and necessary to gain:

- 1- Scientific knowledge essential for practice of Molecular Biology according to the international standards.
- 2- Skills necessary for proper practice in the field of Molecular Biology including diagnostic, problem solving and decision making skills.
- 3- Ethical principles related to the practice in this specialty.
- 4- Active participation in community needs assessment and problems solving.
- 5- Maintenance of learning abilities necessary for continuous medical education.
- 6- Maintenance of research interest and abilities.

2. Intended Learning Outcomes of Courses (ILOs)

a) **Knowledge and understanding:**

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

- a1. Illustrate the function of the different cells and organs in relation to their microscopic and molecular structure .
- a2. Define the molecular structure of the nucleus and the cytoplasmic organelles.
- a3. Define the hazardous effects of common chemicals used and the precautions to avoid or minimize these hazards.

b) Intellectual Skills

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

- b1. Interpret the medical importance of the histological structure at molecular level.
- b2. Evaluate the general and specific histological stains for micro detection of the cytoplasmic content.
- b3. Risk assessment and management in dealing with lab animals and conducting tissue preparation.
- b4. Present evidence based scientific discussions in at least ten seminars.
- b5. Analyze and criticize scientific research papers in at least ten journal clubs

c) Professional and Practical Skills:

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

- c1. Perform all the methods of administration to the lab animals.
- c2. Apply molecular biology study in his research work.

d) General and Transferable Skills:

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

- d1. Communicate effectively with students, colleagues and professors.
- d2. Assess his performance and improve it continuously.
- d3. Use the web sites, medical journals, personal communications ,digital libraries to gain knowledge.
- d4. Administer scientific activities as seminars, journal clubs ,scientific meetings or conferences.

3. Contents

Topic	No. of hours	Lecture	Tutorial/ Practical
1-Molecular aspects of the cell	5	5	
2-Genes and genetic information	5	5	
3. basic techniques in molecular biology	5	5	
4. restriction enzymes	5	5	
5. molecular hybridization	5	5	
6. molecular cloning	5	5	
7. polymerase chain reaction (PCR)	5	5	
8. DNA sequencing	5	5	
9. Gene Therapy	5	5	
10. Apoptosis	5	5	
10. Transport across Cell Membranes	10	10	
11. Cell-to-Cell Signaling	5	5	
Total	60	60	
Credit hours	4	4	

4. Teaching and Learning Methods

- 4.1-lectures
- 4.-Practical lessons and computer based lectures.
- 4.3- Assignments

4.4- Attending and participating in scientific conferences, seminars, work shops and thesis discussion to acquire the general and transferable skills needed

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 assignment	-General transferable skills, intellectual skills

Assessment Schedule

By the end of the course:

Assessment 1	Final written exam	Week 24
Assessment 2	Final Structured Oral Exam	Week 24
Assessment 3	Final OSPE	Week 24
Assessment 4	attendance & absenteeism throughout the course	

Weighting of Assessments

Final Written Examination	50 %
Structured Oral Exam	30 %
OSPE	20%
Total	100%

Formative only assessments: attendance and absenteeism

6. **List of References**

6.1- Course Notes

Lecture notes prepared by the staff members in the department.

6.2- Essential Books (Text Books)

Molecular Cell Biology (Lodish, Molecular Cell Biology)

Harvey Lodish, Arnold Berk, Chris A. Kaiser, and Monty Krieger (June 15, 2007).

6.3- Recommended Books

Molecular Biology of the Cell: Reference Edition by Bruce Alberts, Alexander Johnson, Julian Lewis, and Martin Raff (Nov. 14, 2007).

6.4- Web Sites:

<http://www.ncbi.nlm.nih.gov/pubmed/>

7. Facilities Required for Teaching and Learning

1. Adequate infrastructure: including teaching places; hall and laboratory, comfortable desks, good source of areation, bathroom, good illumination and security and safety.
2. Teaching tools: including screen, computers, data show, slide projector, flip chart, white board, video player, digital camera, scanner and colored and lazer printers.
3. Computer programs: for designing and evaluating MCQs.

Course coordinator: Dr/ Ahmed Moner

Head of the department: Dr/ MostafaAbo Sedaraa

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

Course Specifications of Genetics for MD Degree in Histology and Cell Biology

Sohag University

Faculty of Medicine

1. Program on which the course is given: MD Degree in Histology and Cell Biology
2. Minor element of program
3. Department offering the program: Histology and Cell Biology Department
4. Department offering the course: Histology and Cell Biology Department
5. Academic year: Post graduate, MD Degree in Histology and Cell Biology, 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 Genetics for MD Degree in Histology and Cell Biology

Code: PED 0511-300

Title	Lecture	Practical	Total
Genetics	60		60

B- Professional Information

1- Overall Aims of Course

The aim of this program is to provide the postgraduate student with the medical knowledge and skills essential for the practice of specialty and necessary to gain:

- 1- Scientific knowledge essential for practice of Genetics **according** to the international standards.
- 2- Skills necessary for proper practice in the field of Genetics **including** diagnostic, problem solving and decision making skills.
- 3- Ethical principles related to the practice in this specialty.
- 4- Active participation in community needs assessment and problems solving.
- 5- Maintenance of learning abilities necessary for continuous medical education.
- 6- Maintenance of research interest and abilities.

2- Intended Learning Outcomes of Courses (ILOs)

a) **Knowledge and understanding:**

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

- a1. Illustrate the function of the different cells and organs in relation to their chromosomal, genetic and molecular structure .
- a2. Describe the methods of cell division and its abnormalities.
- a3. Define the hazardous effects of common chemicals used research of medical genetics and the precautions to minimize these hazards.

b) **Intellectual Skills**

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

- b1. Apply appropriate research strategies for use in genetics.
- b2. Advocate appropriately in the research design in genetics.
- b3. Conduct experimental studies in the field of Histology.

- b4. Risk assessment and management in dealing with lab animals and conducting tissue preparation for research in genetics.
- b5. Administrative evidence based scientific discussions in at least ten seminars.
- b6. Analyze and criticize scientific research papers.

c) Professional and Practical Skills:

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

- c1. Prepare solutions used for genetic research perfectly.
- c2. Perform all the methods of administration to the lab animals and genetic lab.
- c3. Apply genetics study in his research work.

d) General and Transferable Skills:

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

- d1. Communicate effectively with students, colleagues and professors.
- d2. Assess his performance and improve it continuously.
- d3. Use the web sites, medical journals, personal communications, digital libraries to gain knowledge.
- d4. Work coherently and successfully as a part of a team or as a leader.
- d5. Administer scientific activities as seminars, journal clubs, scientific meetings or conferences.

3- Contents

Topic	No. of hours	Lecture	Tutorial/ Practical
Chromosomal basis of heredity	4	4	
The normal chromosome.	4	4	
Cell division Mitosis Meiosis Cell cycle	4	4	
Chromosomal aberrations Numerical aberrations Structural aberrations	4	4	
Genetic basis of heredity	4	4	
Structure and function of genes	4	4	
DNA Genetic code DNA replication RNA Gene Expression (protein biosynthesis). Transcription Translation Post transcriptional process.	8	8	
Regulation of gene expression.	4	4	
Mutations	4	4	
Genetic basis of some human diseases	4	4	
Recombinant DNA technology	4	4	

PCR DNA sequencing DNA microarray	4	4	
Gene mapping.	4	4	
Laboratory biosafety and experimental animal handling	4	4	
Total	60	60	
Credit hours	4	4	

4-Teaching and Learning Methods

4.1- lectures.

4.2-Practical lessons and computer based lectures.

4.3- Assignments

4.4- Attending and participating in scientific conferences, work shops and thesis discussion to acquire the general and transferable skills needed

4- 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 assignment	-General transferable skills, intellectual skills

Assessment Schedule

By the end of the course:

Assessment 1	Final written exam	Week 24
Assessment 2	Final Structured Oral Exam	Week 24
Assessment 3	Final OSPE	Week 24
Assessment 4	attendance & absenteeism throughout the course	

Weighting of Assessments

Final Written Examination	50 %
Structured Oral Exam	30 %
OSPE	20%
Total	100%

Formative only assessments: attendance and absenteeism

5- List of References

6.1- Essential Books (Text Books)

- Junqueira, Carneiro and Kelly (2018): Basic Histology, 15th ed. Librarian du liban and lang buruit, London, New York.
- Fawcett(1997): A Text Book of Histology, 12th ed. Chapman and Hall, New York, London.
- Drury, R.A.B. and Walington, E.A. (1980): Histological techniques, 5th ed. Oxford university press, New York.

-Pears, A.G.E. (1985): Histochemistry theoretical and applied, 4th ed. Churchill Livingstone, Melbourne and New York.

6.2- Recommended Books

- Cormack, H.D. (2001): A text book of Histology, second edition, Lippincott, J.B. Company, Philadelphia.
- Williams, P.L. (2015): Gray's Anatomy, the anatomical bases of Medicine and Surgery, 41th ed., Churchill, Livingstone, Britain.

6.3- Web Sites:

<http://www.histology-world.com>

<http://histo.life.illinois.edu/histo/atlas/slides.php>

6- Facilities Required for Teaching and Learning

- 1- Adequate infrastructure: including teaching places; hall and laboratory, comfortable desks, good source of aeration, bathroom, good illumination and security and safety.
- 2- Teaching tools: including screen, computers, data show, slide projector, flip chart, white board, video player, digital camera, scanner and colored and lazer printers.
- 3- Computer programs: for designing and evaluating MCQs.

Course coordinator: Dr. Nesreen Gamaal El-Deen

Head of the department: Dr. Hekmat O AbdEl-Aziz

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

Course Specifications of Histology For MD Degree in Histology and Cell Biology

Sohag University

Faculty of Medicine

- 1- Program on which the course is given: MD Degree in Histology and Cell Biology
- 2- Major element of program
- 3- Department offering the program: Histology and Cell Biology Department
- 4- Department offering the course: Histology and Cell Biology Department
- 5- Academic year: Post graduate, MD Degree in Histology and Cell Biology, 2nd part
- 6- Date of specification approval: Faculty council No: "317", decree No. "1533" dated 17/12/2018.

A- Basic Information

Title: Histology For MD Degree in Histology

CODE: HIS 0511-300

Title	Lecture	Practical	Total hours	Credit hours
Histology and Cell Biology	420	750	1170	53

B- Professional Information

1. Overall Aims of Course

The aim of this program is to provide the postgraduate student with the medical knowledge and skills essential for the practice of specialty and necessary to gain:

1. Scientific knowledge essential for practice of Histology according to the international standards.
2. Skills necessary for proper practice in the field of Histology including diagnostic, problem solving and decision making skills.
3. Ethical principles related to the practice in this specialty.
4. Active participation in community needs assessment and problems solving.
5. Maintenance of learning abilities necessary for continuous medical education.
6. Maintenance of research interest and abilities.

2. Intended learning outcomes (ILOs):

a) Knowledge and Understanding:

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

- a1. Gain sufficient knowledge of the histological structure of the different body tissues and organs.
- a2. Describe the function of the different cells and organs in relation to their microscopic and molecular structure .
- a3. Describe the molecular structure of the nucleus and the cytoplasmic organelles.
- a4. Describe the methods of cell division.
- a5. List the different methods for tissue examination.
- a6. List the different types of histological stains.
- a7. Have sufficient knowledge to detect the presence of protien, carbohydrate , lipids and enzymes in the tissue by different specific methods.

b) Intellectual Skills:

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

- b1. Differentiate between general and specific histological stains for detection of the cytoplasmic content.
- b2. Identify the different histological slides.
- b3. Analyze the contents of any histological slide.
- b4. Identify the histological structure of the body organs.
- b5. Interpret the medical importance of the histological structure at molecular level.
- b6. Recognize any morphological abnormalities in the examined slides by light and electron microscopes.

c) Professional and Practical Skills:

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

- c1. Prepare solutions used for micro techniques and different stains perfectly and independently.
- c2. Deal with a wide variety of lab animals.
- c3. Perform all the methods of administration to the lab animals
- c4. Perform the steps of micro technique for paraffin section preparation perfectly and independently.
- c5. Prepare frozen sections perfectly and independently.
- c6. Perform special histological stains perfectly and independently.
- c7. Perform all histochemical reactions perfectly and independently.
- c8. Perform tissue preparations for E.M. perfectly and independently.
- c9. Perform the steps of immunohistochemistry perfectly and independently.

d) General and Transferable Skills:

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

- d1. Work in groups, as a leader or as a colleague.
- d2. Use the advanced biomedical information to remain current with advances in knowledge and practice (self learning).
- d3. Maintain a professional image in manner, dress, speech as well as interpersonal relationships.
- d4. Participate in the medical progress by having advanced medical research studies.
- d5. Mention the presentation skills through the attendance and participation in scientific activities.

3. Contents

Topic	No. of hours	Lectures	practical
<p>Microscopy</p> <ul style="list-style-type: none"> -Types of microscopes. -Light microscope and the resolving power -Electron microscope; types, resolving power and terms used - Fluorescent microscope - Phase contrast microscope - Polarizing microscope -Confocal microscope 	15	5	10
<p>Micro technique</p> <ul style="list-style-type: none"> -Preparation of paraffin blocks and sections -Filming -Smearing -Grinding -Spreading -E.M. preparations -Frozen section preparation 	60	10	50
<p>Histological stains</p> <ul style="list-style-type: none"> -Hematoxylin and eosin -Stains for collagen fibers -Stains for elastic fibers -Stains for reticular fibers -Stains for specific proteins -Stains for specific carbohydrates -Stains for specific lipids -Stains for specific enzymes 	70	10	60
<p>Immunohistochemistry</p> <p>Principles and bases of immunohistochemistry</p>	5	5	0
<p>Cell and tissue culture</p> <p>General principals of tissue culture</p> <p>Uses of tissue culture</p> <p>Steps of tissue culture</p> <p>Precautions of tissue culture</p>	5	5	0
<p>Exfoliative cytology</p> <ul style="list-style-type: none"> - Cell block. - Smears. <p>Millipore filter technique.</p>	5	5	0
<p>Nucleus and Cytogenetics</p> <ul style="list-style-type: none"> -L.M. &E.M. of the nucleus -DNA &RNA -Cell cycle &cell division -Abnormalities of cell division -Chromosome structure -Karyotyping -Chromosomal abnormalities 	5	5	0

Cytoplasm -Cell membrane ;L.M.,E.M. and molecular structure -Cytoplasmic organelles ;structure and function -Cytoplasmic inclusions	10	5	5
Cell signals and receptors	10	5	5
Cloning Gene therapy	10	5	5
Apoptosis - Theories of cell death. -Types of cell death. -LM features of apoptosis. - EM features of apoptosis. -Immunohistochemistry of apoptosis	10	10	0
Epithelial tissue - General characters of epithelium - Covering and lining epithelium -Glandular epithelium -Germinal epithelium -Neuroepithelium	35	10	25
Connective tissue - General characteristics of c.t. proper. - Components of c.t.;matrix, fibers and cells. - Intercellular substances; chemical composition and staining properties. -Types and sites of c.t. proper. -C.T. cells.	35	10	25
Cartilage -Histological features of cartilage. -Cartilage cells. -Histological features, stains and sites of hyaline cartilage. -Histological features, stains and sites of elastic cartilage. -Histological features, stains and sites of fibro cartilage. - Growth and nutrition of cartilage.	30	10	20
Bone -Histological features of bone. -Bone cells. -Bone matrix. - Bone ossification. - Growth and nutrition of bone. -Healing of fractures. -Joints.	25	15	10
Intercellular matrix	10	10	0
Blood and Hemopoietic Tissue - Blood components. -Erythrocytes:structure,normal count,life span,function, diameter and colour ,abnormalities with reference to some blood diseases. - Leucocytes: classification and structure,normal count,life	35	10	25

<p>span,function and diameter for each type.</p> <p>-Plateletes: structure,function,normal and abnormal count.</p> <p>-Bone marrow:types and structure.</p> <p>-Haemopoiesis: development of different blood elements.</p>			
<p style="text-align: center;">Muscular tissue</p> <p>-General structure and types.</p> <p>-Skeletal muscle(L.M&E.M.):</p> <p>General features and types of sk. Muscle fibers.</p> <p>Organization of skeletal muscle as an organ.</p> <p>Functional ultrastructure of myofibrils and sarcomere.</p> <p>Molecular structure of actin and myosin.</p> <p>Sliding filament theory of muscle contraction.</p> <p>The role of tubular system in muscle contraction.</p> <p>Sensory and motor innervation of skeletal muscles.</p> <p>-Cardiac Muscle (L.M&E.M.):</p> <p>General structure and functional relations</p> <p>Intercalated discs.</p> <p>Conducting system of the heart.</p> <p>-Smooth muscle (L.M. &E.M.):</p> <p>General structure.</p> <p>Interrelation of fibers and bundles.</p> <p>-Comparative study of the three types of muscles.</p> <p>Growth and regeneration of muscles.</p>	55	20	35
<p style="text-align: center;">Nervous tissue</p> <p>Neuron structure;L.M.&E.M.</p> <p>Types of nerve cells.</p> <p>Types and structure of nerve fibers.</p> <p>The organization of nerve fibers.</p> <p>Myelination.</p> <p>Structure of ganglia and types.</p> <p>Degeneration and regeneration of neurons.</p> <p>Neuroglia and their functions</p> <p>Types and structure of nerve endings.</p> <p>Blood brain barriers.</p> <p>Tissue receptors</p>	55	20	35
<p style="text-align: center;">Cardiovascular system</p> <p>General structure of the heart wall.</p> <p>General structure of the wall of blood vessels.</p> <p>Arteries (large+medium sized)</p> <p>Viens (large+medium sized)</p> <p>Structure of special types of ateries and veins.</p> <p>Arteriovenus connection;capillaries,sinusoids and arteriovenous anastomosis.</p>	55	20	35

<p style="text-align: center;">Lymphatic and immune system</p> <ul style="list-style-type: none"> -Structure of lymph vessels. -Distribution and structure of lymphoid tissue. -structure and function of lymphatic nodule -lymphocytes and immune cells -reaction of B&T lymphocytes to antigens. -Common mucosal immune system. -Structur and function of lymphatic organs: Lymph nodes. Spleen thymus Tonsils Mononuclear phagocytic system. Antigen presenting cells. Stains to identify member of immune cells. 	45	10	35
<p style="text-align: center;">Integumentary system</p> <ul style="list-style-type: none"> Structure and function of the skin. Different types of cells in the epidermis. Skin types and their sites. Keratinization of skin. Pigmentation of skin. Immune responses of the skin. Sweat glands;eccrine,apocrine. Hairs and hair follicles. Sebaceous glands and erector pili muscles. Nails. Sensory receptors of the skin. 	50	10	40
<p style="text-align: center;">Digestive system</p> <ul style="list-style-type: none"> Oral cavity: Lip Tongue. Cheek. Teeth and gingiva. Salivary glands: Classification; major and minor. Parotid gland Submandibular gland. Sublingual gland. Differences between different glands. Palate and pharynx: Hard and soft palate. Pharynx; structure and function. Pharangeal and palatine tonsil. Digestive tract: General structure of GIT. Oesophagus. Stomach; fundus, cardiac and pylorus. Small intestine; duodenum, jejunum and ileum. Large intestine and appendix. 	75	25	50

<p>Cell renewal in GIT. Junctions; gastro-oesophageal, pylorodudenal and rectoanal. Pancreas: Exocrine portion and pancreatic secretion. Endocrine portion. Liver: Internal organization and hepatic lobulation. Hepatocytes;LM&EM. Bile canaliculi. Blood supply. Space of Disse. Structure and function of gall bladder.</p>			
<p style="text-align: center;">Respiratory system</p> <p>-Structure and function of conducting portion of the respiratory system: Nasal cavity. Nasal concha. Olfactory area. Paranasal sinuses. Nasopharynx and pharangeal tonsil. Larynx and epiglottis. Trachea and tracheobronchial epithelium. Bronchial tree. Bronchioles. -structure and function of the respiratory portion: Respiratory bronchioles. Alveolar ducts and alveolar sacs. Alveoli and alveolar epithelium; types and function of cells. Surfactant and its function. Respiratory barriers. Lung lobules. Structure of the pleura. Structure of the fetal lungs. Blood supply, lymphatics and smooth muscle. Innervation of the lung. Non respiratory function of the lung. Bbronchus-associated lymphatic tissue. -Neuroepithelial structures in the respiratory epithelium.</p>	50	20	30
<p style="text-align: center;">Endocrine system</p> <p>Main components of endocrine system. Pituitary gland: Development and general organization. Anterior lobe and its relation to the hypothalamus. Posterior lobe and its relation to the hypothalamus. Thyroid gland: Development. Microscopic structure; LM.&EM. Characteristic properties. Function and mechanism of secretion.</p>	40	20	20

<p>Hypo and hyperfunction and its relation to the structure.</p> <p>Parathyroid gland: Development,site and its relation to the thyroid. Chief and oxyphil cells; structure and function.</p> <p>Suprarenal gland Development (cortex and medulla). Adrenal cortex;zona glomerulosa, zona fasciculata, zona reticularis. Adrenal medulla; chromaffin cells and ganglion cells. Adrenal hormones. Blood supply of the adrenal gland and its significance.</p> <p>Paraganglia: Structure and function. Relation to supra renal medulla.</p> <p>Pineal gland: Development. Structure and function. Pinealocytes structure and function.</p>			
Neuroendocrine system	10	10	0
<p style="text-align: center;">Stem cells</p> <p>- Characters of stem cells. -Types of stem cells. Role of stem cells and progenitor cells in development. -Examination of living cells. -Human embryonic stem cells. -Adult human stem cells. -Stem cell storage. -Clinical application of stem cells. -Religious,ethical and political concerns of stem cells. -Future of stem cell therapy.</p>	10	10	0
Urinary system	60	30	30
<p>Kidney General structure; cortex and medulla, lobes and lobules. Nephron structure; renal corpuscle, proximal tubules, loop of Henle and distal tubules. Filtration barrier. Juxtaglomerular apparatus. Collecting tubules. Renal blood supply; glomerular and non glomerular blood. Renal interstitium. Urinary passages Ureter. Urinary bladder Male and female urethra.</p>			
Male reproductive system	60	30	30
<p>Testis: Capsule and outlines of internal structure. Seminiferous tubules. Spermatogenic cells. Spermatogenesis;spermatocytogenesis and spermiogenesis.</p>			

<p>Spermatozoa. Sertoli cells and blood testicular barrier. Interstitial cells of Leydig. Hormonal basis of testicular function. Male genital ducts; structure and function: Tubuli recti. Rete testes. Ductuli efferentia. Ductus epididymis. Ejaculatory duct. Accessory male genital tracts; structure and function: Seminal vesicles. Prostate. Bulbo urethral gland. Penis: Structure and mechanism of erection. Male urethra. Semen.</p>			
<p style="text-align: center;">Female reproductive system</p> <p>Ovary; structure and function: Ovarian follicles. Ovulation. Ovarian hormones and ovarian cycle. Uterine (fallopian tubes) structure and function. Uterus; structure and function:. Menstrual cycle. Cervix. Fertilization and preimplantation development. Placenta: Development, structure and function. Placental circulation and placental barrier. Vagina; structure and function. External genitalia; structure and function. Mammary gland: Structural organization in different physiological states.</p>	60	30	30
<p style="text-align: center;">The eye</p> <p>Wall of the eye; structure and function of each component. Lens; structure and function. Chambers of the eye. Vitreous body. Accessory structures of the eye: Conjunctiva Eye lids Lacrimal glands</p>	40	20	20
<p style="text-align: center;">The ear</p> <p>External ear. Middle ear. Inner ear. Neuroepithelial structure in the ear and thjeir function.</p>	15	10	5
Chemotaxis	10	10	0

Tissue barriers -epithelial and blood tissue barriers. -CT barriers. -immune barriers.	15	10	5
Cellular basis of aging	10	10	0
CNS Anatomical consideration of the CNS. Meninges, CSF and blood brain barrier. Spinal cord: Grey matter. White matter; ascending and descending tracts. Different segments of the spinal cord. Brain stem: Medulla oblongata; closed and open and spinomedullary transition. Pons; superior, middle and inferior levels and medullary pontine junction. Midbrain; superior and inferior levels. Cerebellum; cortex, medulla, nuclei, connection. Diencephalon; thalamus, medial and lateral geniculate bodies, internal capsule and corpus striatum. Cerebral cortex. Reticular formation& ARAS system.	70	30	40
Molecular biology and its significance in Histology	10	10	0
Total	1170	420	570
Credit hours	53		

4. Teaching and Learning Methods

- 4.1- Lectures in the form of discussions.
- 4.2- Practical sessions including practical assignments.
- 4.3- Assignments
- 4.4- attending and participating in scientific conferences, work shops and thesis discussion to acquire the general and transferable skills needed

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 assignment	-General transferable skills, intellectual skills

Assessment Schedule

- 1-Assessment 1... Written exam week 96
- 2-Assessment 2... Structured Oral Exam week96
- 3-Assessment 3... OSPE exam week96
- 4-Assessment 4 attendance & absenteeism throughout the course

Weighting of Assessments

- Final-term written examination separate exam
- Passing in the written exam is a condition to attend the following exams:
- Structured Oral Exam 50 %
- OSPE Examination 50 %
- Total 100 %
- formative only assessments :simple research assignment ,logbook ,attendance and absenteeism

6. List of References

6.1- Essential Books (Text Books)

- Junqueira, Carneino and Kelly (2018): Basic Histology, 15th ed.Librairie du liban and lang buruit,London,New York.
- Fawcett(1997):A Text Book of Histology,12th ed.Chapman and Hall,New York,London.
- Drury,R.A.B. and Walington,E.A.(1980): Histological techniques,5th ed.Oxford university press,New York.

- Pears,A.G.E.(1985): Histochemistry theoretical and applied,4th ed.Churchill Livingstone,Melbourne and New York.

6.2- Recommended Books

- Cormack,H.D.(2001): A text book of Histology,second edition,Lippincott,J.B. Company,Philadelphia.
- Williams,P.L.(2015):Gray's Anatomy,the anatomical bases of Medicine and Surgery,41th ed.,Cgurchill,Livingstone,Britain.

6.3- Web Sites:

- <http://www.histology-world.com>
- <http://histo.life.illinois.edu/histo/atlas/slides.php>

6.4-Periodicals:

- Egyptian J of Histology
- Egyptian J of Anatomy
- Acta Anatomica
- International J of Experimental Research

- Science
- Cell and Tissue Research

7. Facilities Required for Teaching and Learning

7.1-Adequate infrastructure: including teaching places; hall and laboratory, comfortable desks, good source of aeration,bathroom,good illumination and security and safety.

7.2- Teaching tools: including screen, computers, data show, slide projector, flip chart, white board, video player, digital camera, scanner and colored and lazer printers.

7.3- Computer programs: for designing and evaluating MCQs.

Course coordinator: Dr. Nesreen Gamaal El-Deen

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